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TIME FACTORS AFFECTING THE RETENTION DECISION OF NAVY ENLISTED MEMBERS

by

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Time Factors Affecting the Retention Decision of Navy Enlisted Members

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ABSTRACT

The purpose of this thesis is to determine how time affects the factors that influence the retention decision of Navy enlisted members. The empirical analysis utilizes two different samples, the first composed of enlisted members and the second of members and their spouses. What differentiates this study from other retention studies is the stratification of the samples before conducting the analysis. Multivariate analysis was used to determine the change in the probability of reenlistment and the significance of identified variables. Results show that member's intentions are a good predictor of reenlistment behavior, and that the impact of each factor affecting the reenlistment decision changes, depending on the member's gender, time to EAOS and enlistment term. Spouse and family factors were also found to affect the member's reenlistment decision. This information assists in developing an understanding of the factors that are important to service members, which should facilitate policies to increase retention of Navy enlisted members.

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I. INTRODUCTION

The Navy has always been interested in retaining high quality enlisted members. Today, retention is even more important to Navy manpower planners due to several current personnel considerations, in particular problems associated with recruitment and the need for experienced petty officers.

Recruiting and retention are the two methods used by the Navy to meet its manpower requirements. Although they are often viewed as separate entities, planners must consider both policies when developing the total manpower picture. Recruiting has not been a problem in recent years, but the future may not be so bright. The youth cohort from which the Navy draws its enlistees is declining. In 1981 the military-aged population (18 to 24) peaked at 30.5 million. Since that time, the population has been dropping and is estimated to reach a low of 23.5 million in 1996. The population is then expected to rise again, peaking at 27.7 million in 2010. (Eitelberg, 1987, p. 3)

Recruiting has also been hampered by the improved economy. This gives the service-aged individual improved civilian job opprotunities. Lastly, it is predicted that the Navy budget will decline. Since 1986, the defense budget has had negative real growth. The proposed 1990

presidential budget asked for zero real growth, but Congress has indicated another year of negative growth for the Defense Department. These reductions make funds for advertising and enlistment incentives even harder to come by, therefore increasing the difficulties in recruiting.

The shrinking manpower pool and the declining budget point to the importance of improving retention. If the Navy reduces recruiting requirements by increasing retention, it will ensure an adequate supply of manpower to man the fleet. However, overcoming recruiting problems is only one payoff from increased retention. Today's Navy is one of sophisticated weapons and complicated equipment. The technically trained, experienced petty officer is an integral part of ensuring the equipment and systems are properly operated and maintained. It is imperative that the Navy retains these qualified enlisted personnel to operate its advanced systems.

By increasing the number of trained petty officers through higher retention, the Navy will develop a more senior, experienced enlisted cohort, which may be more cost effective and efficient. Savings, or cost effectiveness, is realized in several areas. First, by reducing the number of recruits needed, the costs associated with recruiting (such as advertising, induction, transportation, and basic training) are reduced. Second, the majority of occupational training an enlisted member receives is completed within the

first two years of service. Studies show that, on average, an individual does not become 100 percent effective until the end of their first term, so the longer the service member can be retained, the greater the Navy's return from its training investment in the individual. (Marcus and Quester, 1984)

Increased retention improves efficiency in several ways. First, the technically trained, senior service member is more experienced with both the operation and maintenance of sophisticated systems and equipment. These systems should, consequently, operate more efficiently with less down time, thereby increasing readiness. Secondly, these experienced members would be able to provide better training and leadership to junior enlisted personnel.

Retention, like recruiting, faces hard times. Improved economic conditions have made it difficult to retain service members due to more attractive employment opportunities in the civilian sector. This is especially true for those service members with technical training that is in high demand. First and second term retention peaked in fiscal year 1986, at 36.8 and 53.3 percent respectively. Both have declined since then, with first term retention at 35.5 percent and second term at 51.8 percent for fiscal year 1988.[1] Furthermore, retention will also be affected by the

[1]Data are the unadjusted retention rate received from the Navy Personnel Statistics Division of the Naval Military Personnel Command (1643C).

projected decline of the Navy budget. A reduced budget will lead to declines in pay, selective reenlistment bonuses and other associated personnel retention incentives. Other factors that might affect retention include; the increasing gap between military pay and civilian pay, the quality of military life experienced by the military member his dependents, sea duty, service members education and race.

In an effort to determine what factors have the greatest effect on retention in the military, many studies have been undertaken by both Department of Defense and civilian researchers. The studies often group their data, looking only at those individuals who have a year or less remaining of obligated service. Some of the studies looked at actual reenlistment behavior, while others looked at the member's intention to reenlist. The majority of work done in this area focused on males due to the small number of females on active duty in the past. Additionally, researchers in the past seemed to limit the scope of their studies to one group of individuals, i.e., those on their first or second enlistment. The possibility of differences existing between those on different enlistment terms has not been addressed in a single study.

Another aspect of retention that has been studied is that of the spouse's influence on the member's reenlistment decision. However, the work centers only on whether or not the spouse has an effect on retention, and not on which

specific factors might influence the spouse to encourage or discourage the reenlistment decision of the service member.

The purpose of this thesis is to determine what factors influence the retention decision of Navy enlisted members. This study will not only examine what variables affect reenlistment, but how time affects the intentions of Navy enlisted members at various points in their career. Specific time periods prior to the reenlistment decision will be examined in greater detail than previous studies, to see if individual's intentions change with time, and if they do, what variables are most significant in each time period. This will be accomplished for both male and female Navy service members using the 1985 Department Of Defense Survey of Officer and Enlisted Personnel (member survey). This survey has been augmented by DMDC data that contains the actual reenlistment behavior of surveyed service members.

Additionally, this study will examine how spouse and family factors influence the reenlistment decision of military members and what factors are most important to the spouse. A spouse model will be developed and the data from the 1985 Department Of Defense Survey of Military Spouses (married survey), also with an addendum of military member's actual retention behavior, will be utilized.

By determining what variables are significant and at what time periods, policies could be developed to improve the retention of Navy members. Career counselors could

focus their efforts on the most significant factors at the relevant time periods to ensure that the desires and needs of enlisted members and their dependents are addressed.

The next chapter of this thesis will review the existing literature that identifies those factors affecting retention. It will include both civilian and military studies and the empirical techniques used to determine their findings. Chapter III will present the models used in this study. It will include the definition of variables and the methodology used for analysis. Chapter IV discusses the empirical results of the analysis, and the effects of stratification by time will be examined. Significant variables will be identified and behavioral hypotheses tested. Finally, Chapter V contains the conclusions of the analysis, implications for Navy policy and recommendations for future studies.

II. LITERATURE REVIEW

Numerous past studies have examined the factors that influence the reenlistment behavior of military members. However, these studies differ in many ways. For example, they may differ in the methodology used for analysis. Researchers have used regression analysis, path analysis or developed simple listings or cross tabulations of factors found to be important. The data used for studies might come from background information, paper and pencil surveys, or it could be gained from conducting personal interviews. The specific area of research tends to differ slightly from study to study. For example, one study may look at the current term of enlistment while another's focus might be the service member's sex.

This chapter reviews the existing literature that addresses the factors that are felt to be important to the reenlistment decision. Most of the studies reviewed are very specific in the topic examined, and most address specific segments of our study, yet the importance of their work can not be overlooked. We have subdivided the literature into topic areas to facilitate understanding the key elements of our work.

A. USING ACTUAL BEHAVIOR OR INTENTION FOR MODELING REENLISTMENT

In identifying the factors that influence retention, an issue common to most studies is whether stated intention to reenlist or actual reenlistment behavior should be used. A larger, more important issue is what assumptions can be made about the relationship between intention and actual behavior.

Using stated intent to remain on active duty, according to a study by Royle and Robertson, may be a superior predictor of actual retention compared to indirect measures of job satisfaction such as pay, work itself or the organization. It is superior because it is a composite of the specific satisfiers important to each individual. Intent to remain in an organization may be useful as a criterion, substituting for actual retention information, because of the strong relationship between the two variables. However, because the intent to remain and actual retention are not perfectly correlated, results from surveys using intent should be validated using actual retention data. Even if satisfaction with the job itself and with the organization are highly related to intent to remain, other factors, such as the external job market have an overriding effect on the subsequent, actual decision. (Royle and Robertson, 1980)

Currently the most effective approach to studying retention, according to Doering and Grissmer, is to

systematically survey individuals about their reenlistment intentions at various times prior to the actual decision. If the survey measuring intentions also contains information about possible reasons for the decision, either for or against reenlistment, and if intentions and behavior can be related with some degree of confidence, policy-relevant analysis can be conducted. (Doering and Grissmer, 1985, p. 32). A study by Hiller, which will be discussed at length later, also concluded that intentions data appear to be closely and systematically related to the actual reenlistment behavior and may be used in analyzing reenlistment factors. (Hiller, 1982)

There are few studies which have used actual reenlistment behavior to predict future retention behavior. A Naval Postgraduate School master's thesis completed by Rearden, developed econometric models predicting Naval male reenlistment behavior, and then tested the validity of the model's ability to predict reenlistment behavior using intentions as an explanatory variable. The data used in this study came from the 1985 Department of Defense Survey of Officer and Enlisted Personnel. A sample of 6328 Navy members, males on their first or second enlistment and within 12 months of their reenlistment decision, was used in the analysis. Her study also used an addendum to the 1985 survey which consisted of the actual reenlistment

information of the individual members participating in the survey.

The variables used in Rearden's study were divided into three categories: demographic, reenlistment intentions, and job satisfaction. The demographic variables selected for her study were: actual retention status of the member, race, age, current marital status, number of dependents, parents' education, highest grade of education, pay grade, and reenlistment period. The reenlistment intention variables were composed of the likelihood of reenlisting and the likelihood of finding a good civilian job. The job satisfaction and satisfaction with family income variables measured total satisfaction.

Three versions of the model used actual behavior data as the dependent variable. The first model considered only the demographic factors as the independent variables. The second model included demographic variables plus the intentions variable. The third model considered demographic factors, intentions, plus satisfaction-type variables. The results indicated that the second model was a more accurate gauge of reenlistment behavior than the first. The results of the third model were not significantly different from those of the second. Two additional models were estimated to analyze the career intentions variable. The first measured career intentions as a continuous independent

variable, while the second measured intentions as a continuous dependent variable.

Rearden concluded that intention to reenlist accurately predicts reenlistment behavior. The models which used the intention variable revealed that, whether divided into a series of dummy variables or used as a continuous variable, intentions had tremendous predictive power when assessing actual reenlistment behavior. This would indicate that once an individual entered the 12-month period prior to the reenlistment decision point, his intention to reenlist, as affected by various factors in his work and family environment, was a very accurate gauge of his actual reenlistment behavior. (Rearden, 1988, p. 70)

In a three-series Westinghouse Public Applied Systems study, Seboda and Szoc support the argument that reenlistment intention does accurately predict actual behavior. Data for this study was collected from an in-depth survey questionnaire completed by officer and enlisted personnel. The questionnaire focused on the service member's retention intention. The target sample was comprised of married personnel who were within six months to one year of a retention decision. The follow-on study was used to determine the actual retention behavior of the 1,550 surveyed respondents, and to examine this behavior in the light of previous retention intentions.

In Seboda and Szoc's study the retention decision was examined in a number of ways. One of the methodologies employed in the study was path analysis. Path analysis was used to examine the relationships among those factors that lead to the retention behavior of either staying or leaving the Navy. In a follow-on study, the same researchers demonstrated the interrelationships between multiple factors in the retention decision. Again using path analysis, they identified a number of factors which indirectly affected retention. These consisted of: opinion of the spouse, years of service, and satisfaction with family separation. However, there was only one factor which was found to have a direct effect on retention behavior, retention intent. The composite of other discriminating factors resulted in an accurate prediction 66 percent of the time. When retention intent was added, correct prediction was possible 73 percent of the time. Retention intent was found to be the most accurate predictor of retention behavior.

Other findings on the intention and behavior issue from the Westinghouse Study include:

1. Many more respondents stayed than had intended to do so.

2. Those intending to leave were most likely to change their minds, and those who were undecided tended to stay.

3. Most of those that left had intended to do so. For the group that stayed, almost half had not indicated this as their original intention.

4. Of those with a clear retention intent, only one-fourth changed their minds. (Seboda and Szoc, 1984)

Dan-Norman Siggerud also discussed the accuracy of "retention intention" as a predictor for actual behavior. His master's thesis, based on a sample of 6598 from a survey of U.S. Navy Enlisted Personnel, attempted to measure the effect of social, environmental and economic factors on the reenlistment intention. Questions concerning the working and living conditions, civilian opportunities and retention elasticities were examined. Under the topic area of working and living conditions, the variables analyzed were; proportions of personnel on sea duty, work hours, and hours on call/duty, reasons given for leaving and income and allowances. The category of civilian opportunities was developed from comparisons of military and civilian work conditions, expectations about civilian income opportunities and financial "loss" by staying in the military. The retention elasticities measured how the retention intention changed under two reenlistment alternatives: a $4000 reenlistment offer and an $8000 reenlistment offer.

This survey was not longitudinal and therefore, it did not follow-up the respondents' current reenlistment intentions with comparisons of actual reenlistment behavior, but Siggerud took specific steps to ensure that the sample would have the highest possible correlation between intention and later behavior. The steps he used were based on the conditions originally outlined by Aizen and Fishbein

in 1980. They found that an individual's intention is generally the immediate and most accurate determinant of behavior, but certain conditions were found to exist:

1. There must be correspondence between the measure of intention and the measure of behavior as to the target, action, time, and context.

2. Intentions change over time. The longer the time interval, the less accurate is the prediction of behavior from intention. In other words, the closer to the decision point, the more accurate is the intention as a predictor of behavior.

3. Aggregate intentions are much more stable than individual intentions over time, because incidents--like injuries, illness, pregnancy, money losses, etc.,--are likely to balance out at the aggregate level. Predictions of behavior from intentions at the aggregate level are therefore often remarkably accurate. (Siggerud, 1981, p. 16)

B. THE EFFECT ENLISTMENT TERM HAS ON REENLISTMENT

Siggerud found that attitudes about various topics, such as housing conditions and reasons for staying or leaving, varied significantly between people in different enlistment periods. He felt that combining younger and older groups of enlistees in the same study would, therefore, only confuse the results and make the results less usable for personnel management purposes. First-termers who serve on board ships, generally have much lower retention intention rates than those who serve ashore. The difference between shipboard and shore retention intention rates are smaller for second-termers, while for third-termers the reenlistment intention rates are higher among those at sea. (Siggerud, 1981, p. 24)

Seboda and Szoc found that enlisted personnel are particularly vulnerable to leaving the Navy within the first 5-8 years of service. Therefore, the factors that influence retention for first-termers will be different from those influencing individuals at other decision points. (Seboda and Szoc, 1984)

Warner, when reviewing an earlier study conducted with Simon regarding Navy enlisted retention and pay, outlined two major findings that justifies term analysis:

1. The second term retention decision is much more a career decision than the first-term retention decision.

2. Post second-term behavior is driven by the retirement system. (Warner, 1981)

Many studies have been done on the first-term reenlistment decision variables, but assessments of the other enlistment terms are not as plentiful. Work by Hiller and by Goldberg and Warner examined decision points other than the first term.

Hiller chose to study only second-term reenlistment in an attempt to understand the role of both pay and non-pay factors in the reenlistment decision, and to estimate the effectiveness of particular reenlistment incentives. To support the analysis, data were drawn from the 1978 DoD Survey of Officers and Enlisted Personnel. The group of second-termers selected for the study was made up of those members from all four services, who were in their sixth to tenth year of service, who had achieved a pay grade of at

least E3 and who had less than one year remaining on their second term of service. The sample size was 2500 military members. A multivariate regression model was used to discover the key determinants of reenlistment intentions for this group. The explanatory variables were of four types: compensation, promotion, location, and job satisfaction. The compensation variables were current income, potential civilian income, and other aspects of pay. Promotion variables included past and future expected promotion rates, promotion rates relative to peers, and expected time to next promotion. Location variables measured the respondents' attitudes toward location, housing, rotation and family separation, and also indicated the types of housing and the actual locations. Job satisfaction variables indicated job classification, hours worked, hours on call, and satisfaction with various aspects of the work environment. This study concluded that compensation and promotion are closely related to the second-term reenlistment decision and that non-pay factors exhibit varying degrees of influence.

To estimate the effects of reenlistment incentives, the survey "what if" questions were used: What if the respondent were offered a guaranteed location, bonus, promotion etc. These findings matched the regression findings that compensation, promotion, and location are related to the reenlistment decision. Although the validity of the "what if" questions had not been tested and the

changes in incentives were not estimated in the context of a statistical model, the results are still important in demonstrating that non-pay factors are related to the second-term reenlistment decision, and that reenlistment incentives based on those factors are potentially worthwhile.

Other conclusions from this study regarding second-term reenlistment incentives emerged from this analysis which are applicable to our study:

1. The potential increase in second-term reenlistment rates due to a guaranteed location of choice is substantial, varies by service, and declines with time in service. The effect of guaranteed location appears to be the equivalent of a substantial (33 percent) reenlistment bonus.

2. Enlistees with lesser family responsibilities are more responsive to the location offer.

3. A large change in expected promotion rate significantly affects reenlistment behavior, implying a monetary equivalent of approximately 26 percent (for a 50 percent change in promotion probability).

4. The influence of promotion on reenlistment increases for enlistees with longer years of service, while that of other incentives decreases.

5. The years of service from the six to ten year period appears to be an important transition period; enlistees who approach their second-term reenlistment decision at years of service six have bonus elasticities nearly equal to those of the first-termers, but enlistees who approach their second-term decision at year of service ten have very low elasticities. (Hiller, 1982)

Goldberg and Warner examined both first and second-term Navy enlisted personnel and the determinants of reenlistment and extension rates. In particular, they analyzed the

separate effects of regular military compensation and reenlistment bonuses on the probabilities of reenlistment and extension. They estimated separate equations for first-termers and second-termers in each of nine occupational categories using data from Fiscal Years 1974 through 1980. The retention data were supplied by the Defense Manpower Data Center (DMDC) subdivided by fiscal year, rating, and length of service. DMDC then computed the reenlistment rate and the extension rate of individuals having less than thirteen months remaining on their current enlistment or reenlistment contracts at the beginning of the fiscal year.

Variables in this study were defined as Military Earnings, Civilian Earnings, Sea Duty, Unemployment Rate, Married, Education, Race and Mental Group for first-termers. Second-termers added the variable Lag Bonus in addition to using the above listed ones. Their study found that the reenlistment rates were highly sensitive to military pay but that rating-specific and term-specific pay coefficients would more accurately determine the bonus increases necessary to alleviate occupational shortages. (Warner and Goldman, 1984)

C. THE EFFECT OF TIME REMAINING ON ACTIVE DUTY ON REENLISTMENT

Most of the studies cited within this paper (including Rearden, Goldberg and Warner, Doering and Grissmer, Siggerud and Cymrot) have stratified their data sets so that only

those members with less than 12 months remaining in their current enlistment were considered.

Cymrot, for example, examined the connection between the predicted reenlistment rates and the definition of the reenlisting population. The overall results of his study are not relevant to this thesis, but outcomes of his analysis, which examined the number of months between the reenlistment decision and the service member's End of Active Obligated Service (EAOS), are germane.

The data used for his analysis were provided by the Manpower Plans and Policy Division of Headquarters, Marine Corps, and covered the period from October 1979 through December 1985. From these 200,000 relevant records, a 10-percent sample was extracted. The timing of the reenlistment/extension decision was defined as the difference in months between the date of action (the reenlistment decision) and date of EAOS. Because reenlistments or extensions can be observed up to a year in advance, the months until EAOS could vary from zero to 12. Generally the act of leaving is not observed until EAOS, so months until EAOS is generally zero for those who choose not to reenlist. The average value for months until EAOS for those who choose to reenlist, in this study, was 5.1.

To further examine the months until EAOS, Cymrot divided his sample into three experience zones. For those in experience zone A (1.5 to six years of service) it was 5.2

months, for those in zone B (six to ten years of service) it was 4.9 months and for experience zone C (10-14 years of service) it was 4.8 months. His study showed that over 50 percent of all actions (reenlistment decisions) were taken within the last month before EAOS. In general, Cymrot found that the rates for reenlistments were relatively constant with the highest percent of reenlistments occurring within two months of EAOS. There was, however, a relatively high percent of reenlistments in the first two months of eligibility (at months 11 and 12). Although there was considerable variation in the monthly averages, he found no clear seasonal pattern. (Cymrot, 1988)

Siggerud, in an effort to ensure the highest possible correlation between intentions and actual behavior, limited his data set to include only those respondents who had one year or less on their current enlistment. This was done to ensure that a possible change in intentions over time would not have an effect on his study. (Siggerud, 1981)

Rearden also believed that limiting the sample to those with less than 12 months left on their reenlistment period was important to the accurate analysis of intentions as a predictor of behavior. Her premise was that an individual who is very close to the reenlistment decision time frame has a much better idea of the factors to consider when making that reenlistment decision. (Rearden, 1988)

Seboda and Szoc believe, however, that individuals with a clear intent to reenlist have formed their decision well in advance of their reenlistment date. For most of the respondents in their study, the decision was formulated 16 to 21 months before their current commitment ended. They determined that any incentives to reinforce this decision should be introduced well in advance of the end of term. (Seboda and Szoc, 1984)

D. THE DIFFERENCES BETWEEN MALE AND FEMALE REENLISTMENT BEHAVIOR

Siggerud found differences between men's and women's reenlistment intentions during the first two periods of enlistment. The retention (intention) rate for women was as high as that of men among first termers. In the second enlistment period, the retention intention rate for men was double that for women. As a conclusion to his study of men and women, Siggerud states, "It seems to take women two enlistment periods before family considerations, dissatisfaction with the Navy, or other factors make their retention intention rates lower than those of men." (Siggerud, 1981, p. 37)

Farkas and Durning also evaluated the results of their study by gender and found many differences. By examining a variety of variables such as sea duty, medical care, child care, and family separation, they were able to determine the different responses of male and female Navy members. They

concluded that not only do family variables have a major impact on reenlistment intentions, but that the sex of the member also has an effect on those intentions. Some of their findings include:

1. Female members married to civilians were more likely to put their career first than were women married to service members.

2. Problems more common to male service members included deployment separation and dependent care issues such as medical care and education.

3. Active duty females with dependents, over half of whom were married to other military members, emphasized problems of common work assignment, career planning, and child care. (Farkas and Durning, 1982)

E. THE EFFECT OF UNEMPLOYMENT ON REENLISTMENT

A study completed for the Center for Naval Analyses (CNA) by Lawrence Goldberg, presented new estimates of the effects of the unemployment rate on first-term reenlistment and extension rates. The research looked at nine Navy rating groups, and determined that unemployment has a positive effect upon both extension and reenlistment rates. The study also demonstrated that, due to the elasticities of unemployment and pay, a decrease in unemployment can easily be offset by a much smaller percent increase in pay. (Goldberg, 1985, p. 9)

Cowin and O'Connor were involved in an analysis of the effects of local economic conditions on Navy first-term reenlistment behavior. Using a sample for four year obligors who enlisted between April and October 1974, a

model was constructed for reenlistment and extension behavior in three occupational groups.

Local economic variables used included unemployment and wages which were calculated for the individual's home town and his or her current duty station. Other model variables included demographic information for each individual (i.e., sex, age, marital status, high school graduate, mental group, age at entry), individuals pay grade, and the reenlistment bonus award level for his or her occupation. The probit maximum likelihood technique was used to estimate the choice equations.

Results of the investigation reinforced a previously observed relationship between home town unemployment at approximately the time of first assignment to duty station and the likelihood of reenlisting or extending for individuals in the administrative and medical ratings. In particular, high home town unemployment was associated with a higher likelihood of remaining in the Navy beyond the end of the first term. (Cowin and O'Connor, 1980)

F. THE EFFECT OF COMPENSATION AND CIVILIAN OPPORTUNITIES

Goldberg's 1985 CNA study concluded that while unemployment is an important determinant of retention, it is of only secondary importance when compared to military pay. Military pay can be used not only to offset changes in unemployment from year to year, but also to control differences in retention rates across ratings through

reenlistment bonuses. Flexible, targeted pays such as reenlistment bonuses are the Navy's most potent tool for controlling retention rates. (Goldberg, 1985, p. 10)

A study conducted by Warner and Goldberg took a different approach to determining enlisted retention decisions. They developed a model that would calculate an individual's "annualized cost of leaving (ACOL)." To use the ACOL model, the individual must evaluate the utility or satisfaction associated with remaining in the military and the utility associated with leaving it. The utility of each of the possibilities has two parts. First, the present value of the income stream. This includes: expected military pay in future years of service, retired pay and future civilian pay. Secondly, the monetary equivalent of the present value of non-pecuniary aspects which takes into account the individuals "taste factors" for military and civilian life.

To use the model, the sum of the present value of military pay and the taste factor for military life, plus the sum of retirement pay plus the taste for civilian life over the remaining years of life are set equal to the sum of civilian pay and the taste for civilian life if the individual leave the service immediately. By determining which side of the equality is largest, the individual will make his or her retention decision. (Warner and Goldberg, 1984)

In a paper restricted to a selected review of research findings and methods for studying the dual issues of attrition and retention, Doering and Grissmer also concluded that retention depends on compensation. This view, which has become commonly accepted, shows that retention rates are sensitive both to the present and expected future value of compensation. The strongest evidence for this sensitivity is the increase in retention rates as individuals approach the 20-year retirement point. Traditionally, the increase is explained as the result of simple principles of individual maximization of discounted, long-term income. Retirement eligibility is vested only after 20 years and the present value of retirement income rises substantially as vesting approaches. Thus, after 10-12 years of service, remaining in the military is almost always preferable to accepting civilian opportunities. (Doering and Grissmer, 1985, p. 15)

A unique characteristic found by Siggerud, concerning compensation, was that those who perceived the biggest monetary "loss" by staying are not necessarily those who say they will leave. It seems that it is more important for pay to be above a certain minimum level; if it falls below that minimum people will tend to leave, even when civilian pay increases are expected to be quite small. He also found that if the whole future pay stream was increased by ten percent, the second term reenlistment rate would increase by

between 13 and 35 percent, depending on the rating. However, the effect of a ten percent increase in just third-term pay would be smaller.

However, when Siggerud studied first-term reenlistment bonuses, he found a different effect. First-term bonuses had a negative effect on second-term retention. Bonus-induced first-term reenlistees had lower "tastes for service" than non-bonus-induced reenlistees, and would be less likely to reenlist after a second term. (Siggerud, 1981)

However, the selected reenlistment bonus (SRB) is one of the best single factors for influencing reenlistments. As with the study conducted by Rearden, this study will not examine the SRB question because the data that will be used for the analysis does not contain SRB information. Nonetheless, there has been significant research conducted in this area and we would be negligent if the topic was not addressed. Cymrot, when examining how bonus programs influence reenlistments in the Marine Corps, found that reenlistment rates increased with SRB. (Cymrot, 1987) A study of the Navy's compensation system conducted by Warner and Goldberg (1984), also found that an increase in SRB levels leads to a significant increase in the number of reenlistments.

Quester and Thomason (1983) took a different approach to examine civilian opportunities. They modeled the pull of

particular civilian occupations on specific Navy ratings by reference to civilian job growth rather than civilian wage levels. Their findings offer clear evidence that reenlistment rates in the Navy do respond systematically to changes in the civilian economy. More importantly, they show that different types of rated Navy personnel respond differently to those changes. Specifically, the most experienced technical enlisted personnel in their sample were more likely than others to leave the service in response to increases in the numbers of comparable civilian jobs, other things being equal.

G. THE EFFECT OF SOCIOECONOMIC FACTORS ON REENLISTMENT

Socioeconomic factors were consistently found to influence reenlistment behavior, according to Cowin and O'Connor. Women and blacks were more likely to reenlist or extend. This might be a further indication that the relative difficulty of finding a civilian job or economic discrimination felt by blacks and women may be an important part of the reenlistment decision. High school dropouts had higher propensities to remain in the Navy than would be expected given their other characteristics. Married people, who may place a greater value on job security, were more likely to reenlist or extend than single people. These demographic factors may, however, be related to reenlistment in other ways. For example, Navy life may make marriages more difficult and consequently reenlistment less likely.

If blacks and women feel discriminated against in the Navy, they may be less likely to reenlist. (Cowin and O'Connor 1980, p. 6)

H. THE EFFECT OF SEADUTY ON REENLISTMENT

A report by Quester and Cooke summarizes the work and findings of the Enlisted Manpower, Personnel and Training (EMPT) study conducted by a team of analysts at the Center for Naval Analyses (CNA). The study examined ways the Navy can most cost effectively attract and retain the enlisted personnel it needs. Detailed descriptions of the analysis have been published in a series of CNA publications, which summarized the main findings relevant to the Navy's manpower needs. One of the primary factors the study team addressed concerning retention was sea duty/sea pay. (Quester and Cooke, 1986)

The main reason for the lower reenlistment intentions of those at sea, as found by Siggerud, seems to be that sea duty results in long periods away from families. Service members on sea duty generally have longer work hours, and their opportunity to use their spare time to earn additional money to fill their family income needs is less than those not on sea duty. (Siggerud, 1981)

Questionnaires given to sailors when they leave the Navy, routinely showed that long sea tours is one of the most important reasons for leaving the Navy, according to a study by Warner and Goldberg (1984). Sea duty was the major

non-pecuniary element influencing reenlistment decisions of enlisted personnel. They found:

1. that the reenlistment supply curves of personnel in Navy occupations characterized by a high incidence of sea duty are likely to be less elastic than the supply curves of other groups.

2. a higher incidence of sea duty was found to reduce the reenlistment rate associated with any given level of pay.

The study concluded that the fraction of time spent in sea duty has a highly significant negative effect on the first-term reenlistment rate.

Warner also summarized the results from an earlier study conducted with Simon in the area of member's duty station. The results found responsiveness to pay was lower in the sea-going ratings and higher for rating groups with little sea duty. He also concluded that first-term retention rates are negatively related to various measures of the extent of sea duty, once other factors have been controlled for. (Warner, 1981)

I. THE EFFECT OF JOB SATISFACTION ON REENLISTMENT

The Navy Occupational Task Analysis Program (NOTAP), a detailed survey of job tasks and attitudes toward the attributes of Navy service revealed that the use of pay to increase reenlistments is still justified, but other non-monetary aspects of military jobs also affect reenlistments. Quantifying the costs associated with increasing reenlistment rates through improving the quality of life

would not be a simple task. However, accomplishing this would allow the Navy to design a total compensation package that achieves the necessary level of retention as efficiently as possible.

In Fletcher's review of NOTAP results for five technical and nontechnical ratings, the following were identified using path analysis and a logit model as factors that made first-term reenlistment more likely: pay and advancement as well as the quality of life factor; medical services and the quality of job factors; personnel utilization, autonomy, meaningful work, and recognition/prestige.

Factors that made reenlistment beyond the first term more likely were: pay and advancement, and the quality of job factors; training opportunities, meaningful work, faith in the organization, and the quality of life factors; and military housing, duty assignments/station, deployment time, and medical services. Finally, job pressure, duty station choice, pay and housing were identified as major sources of discontent across all ratings and terms of service. (Fletcher, 1981)

Seboda and Szoc found the following statements to be true when examining the service members level of satisfaction with the Navy:

1. Persons leaving the Navy were less satisfied with their jobs than those who stayed.
2. Higher social support was associated with staying. (Helpfulness of supervisors and co-workers, and the extent to which supervisors and co-coworkers played a

supportive role when there were personal family problems.

The ten most important factors for staying and leaving for enlisted personnel marked by these respondents were: choice of assignment, satisfaction with Navy job, use of personal skills in job, challenge of Navy job, promises of assignment, cost of medical care, spouse's attitude toward Navy, availability of medical care, financial benefits and promises of training were factors that affect staying. Overall time spent with family, family separations due to deployments, civilian job opportunities, civilian job benefits, total family income, family separations (TAD, etc.), other Navy rules, PCS moves, quality of medical care and spouse's attitude toward Navy affected leaving.

For those who stayed, job related factors were considered to be an incentive for staying, as was spouse's attitude toward the Navy. Also for those who intended to stay, the civilian alternative tended to be only moderately attractive. For those who intended to leave, family separation factors and spouse's attitude tended to be rated as important factors for leaving. The civilian alternative was considered to be attractive, and the Navy job factors were given more neutral ratings. Only one factor appears in common as important for both staying and leaving: spouse's attitude. (Seboda and Szoc, 1984)

In Royle and Robertson's review of job satisfaction studies, they found that the relationship between job

satisfaction and retention was fairly well established in the 1970s. Satisfaction with organization-level variables may be more related to retention than is satisfaction with specific job-level variables. (Royle and Robertson, 1980) Those who felt they had adequate and desirable incomes, as well as those with fewer serious problems, reported less job/family role conflicts, more social support, less depression and anxiety, and less family pressure to leave the Navy. (Farkas and Durning, 1982)

J. THE EFFECT OF NON-MILITARY INFLUENCES ON REENLISTMENT

Up to this point, we have reviewed literature that studied the effects of various "military" factors on reenlistment, primarily focusing on the military member. Another aspect to the reenlistment decision deals with the effects military life has on the member, spouse and family. This will become even more important as the Navy increases its level of experienced personnel to meet the growing needs of the fleet. This shift toward a more senior mix, as studied by Doering and Grissmer, will mean a greater proportion of enlisted members will be married and have dependents. Retention issues will not only consider the military member, but must increasingly focus on family concerns and the concerns of older members. (Doering and Grissmer, 1985, p. 7)

The study by Farkas and Durning assessed the characteristics and needs of Navy families. They used a

stratified random sample of 2126 Navy men and women with dependents. Information was obtained concerning these Navy families by studying the following specific variables: number of serious family problems, rate of relocation, years of service, age, family type (military couple vs military/civilian), status (officer or enlisted), race, sex, education, location of residence, per cent deployed time away from family, hours in Navy work week, total family income, adequacy of total family income, desirability of total family income, number of children, weekly hours with spouse, and percent undeployed time away from family.

Results from their study indicate that family variables do have a major impact on the service member's reenlistment intentions. Other findings from this study include:

1. More than 20 percent of the sample rated the following four areas as serious family problems: adequate housing, sufficient time for family, relocation, and family separation due to sea duty.

2. Residing in Navy housing rather than civilian housing was related to less community support, less spousal support, and less marital satisfaction.

3. Longer Navy workweeks were related to more job/family role conflict, less supervisory support, and more family pressure to leave the Navy.

4. Fewer hours to spend with spouse resulted in less spousal support, less marital satisfaction, more depression, and more job interference with family life.

5. High relocation rates were related to more job interference with family life, more anxiety, more family pressure to leave the Navy, and less spousal support. Obtaining good assignments for both individuals was a serious problem for relocating military couples.

6. High rates of both deployed and undeployed time away from home were related to more job interference with family life. Undeployed time away from home had more extensive effects than did deployed time. High rates of undeployed time away from family were related to less supervisory and co-worker support, more anxiety, and more family interference with the Navy job.

7. Problems more common to male service members included deployment separation and dependent care issues (medical and educational). Active duty females with dependents, over half of whom were married to other military members, emphasized problems of common work assignment, career planning, and child care.

8. Enlisted personnel were more likely to rate economically driven problems as serious.

9. Nonminority personnel, childless individuals, and those with higher total family incomes and working spouses were more likely to perceive family income as adequate and desirable. Perceptions of total family income as adequate and desirable were related to a lower incidence of serious family problems. Those who felt they had adequate and desirable incomes, as well as those with fewer serious problems, reported less job/family role conflicts, more social support, less depression and anxiety, and less family pressure to leave the Navy.

10. The best predictors of reenlistment intention were general satisfaction with life in the Navy, family pressure to leave the Navy, and sex (female service members expressed less intention to reenlist than did males). The best predictor of family pressure was the degree to which members perceived that the Navy job interfered with family life. Navy interference was related to the number of serious family problems, total time deployed during Navy career, number of hours per week with spouse, number of hours in Navy workweek, and the amount of social support received from supervisors.

Three variables, from this study, emerged as significant predictors of intention: general satisfaction with life in the Navy, family pressure to leave the Navy and the sex of the service member. (Farkas and Durning, 1982)

K. THE EFFECTS OF FAMILY SEPARATION ON REENLISTMENT

Applying factor analysis to the U.S. Navy Enlisted Separation Questionnaire for the second quarter of fiscal year 1980, Roger Adams reported that family separation was strongly related to the decision to leave the Navy (Adams, 1981). The earlier described Farkas and Durning study also found separation a significant factor in affecting reenlistment. High rates of both deployed and undeployed time away from home were related to more job interference with family life. Furthermore, time away from home when not deployed, had more extensive effects than did deployed time. High rates of undeployed time away from family were related to less supervisory and co-worker support, more anxiety, and more family interference with the Navy job. (Farkas and Durning, 1982)

Family Separation has been found to have a proportional effect on retention. When time away from the family was over 50 percent, the proportion of those eligible to reenlist, but left the Navy reached 30 percent. This proportion of enlisted personnel who left the Navy declined to 19 percent when they had experienced little or no family separation. (Seboda and Szoc, 1984)

Although the family separation issue is mainly a problem for personnel on board ships, large groups of personnel who serve ashore also mention the same issue. Siggerud's study

shows that single service members also have a need to be with their families. (Siggerud, 1981)

L. THE EFFECT OF GEOGRAPHIC STABILITY ON REENLISTMENT

Research by Warner and Goldberg, Quester and Cooke, and Lockman and Horowitz, have determined that the number of moves or permanent change of stations (PCS) a naval member is required to make, will influence their reenlistment decision. The lack of geographic stability for Navy personnel has been a subject of continuing concern, and there are hints that the frustration of sailors over geographic instability is growing. Some of this frustration has been related to the increased numbers of couples which are dual earners. If these trends continue, the researchers believe there will be more voluntary separations (as employed wives do not accompany their military spouses, particularly for short-term moves) as well as lower retention as more couples decide that family income will be higher if they both pursue civilian employment.

Questionnaires given to sailors when they leave the Navy routinely show that frequent moves and long sea tours (particularly if they involve family separations) are two of the most important reasons for leaving. (Quester and Cooke, 1986) Additionally, high relocation rates were related to more job interference with family life, more anxiety, more family pressure to leave the Navy, and less spousal support (Farkas and Durning, 1982).

M. THE EFFECT OF DEPENDENTS ON REENLISTMENT

Despite the negative impact of family separations/sea duty on the first-term reenlistment rate, most studies find that married people still reenlist at a higher rate than single people. (Warner, 1981) There are several probable reasons for this:

1. Sailors with dependents have relatively higher levels of risk aversion due to the greater importance families place on job stability and the greater value of fringe benefits such as medical care. (Warner and Goldberg, 1984)

2. The military explicitly pays sailors with dependents more than it pays otherwise comparable single sailors. (Quester and Thomas, 1983)

In a series of studies, previously described and referred to as the Westinghouse Studies, Seboda and Szoc analyzed the impact of the Navy job on the family. Two aspects of family composition played an important role: the presence of dependent children and the age of the youngest child. Increased responsibility, in the form of dependent children, appeared to decrease the likelihood of leaving the Navy. However, those members with dependent children under the age of five, are comparatively more likely to leave than those with children aged between five and 12.

The dependent children also have another effect on service members. The traditional family structure can no longer be assumed and child care is becoming a major topic of concern, both in the civilian and military sectors. The cost of child care is rising, and 80 percent of single

parents, and 60 percent of dual-career military/civilian couples paid for child care. (Farkas and Durning, 1979)

N. THE EFFECT OF THE SPOUSE ON MEMBER REENLISTMENT

Although the spouse is considered a military dependent, many studies have examined the special influence the spouse has on the reenlistment decision of the military member. Married people may place a greater value on job security and are more likely to extend or reenlist than are single people. On the other hand, Navy life may make marriages more difficult and consequently, reenlistments could be less likely. (Cowin and O'Connor, 1980, p. 6)

Weinstein and Beach studied the active duty Navy members, their wives and their views on the reenlistment decision. These researchers held conversations with 99 Naval enlisted persons to discover the reasons that weighed for and against reenlistment. In conversations it became clear that the opinions of spouses were extremely important in the decisions. Spouses (numbered at only 14), were asked to participate in a group discussion. Results from that discussion produced a list of good things about Navy life: job security-paycheck every week, travel opportunities, medical, dental and other benefits, spouse time off, early retirement, meeting different types of people, continued education, training, opportunities for advancement/pay increases. The bad things about Navy life were outlined as: separation because of sea duty and its effect on financial

problems, moving-packing and unpacking or the number of permanent change of station (PCS) moves and this effect on financial status, discrimination in employment, wife head of family role and wife stress. shortages of base housing, overall finances (ability to fund children's education) and resentment about reenlistment bonuses-equity.

According to Seboda and Szoc, the most influential member of the family unit second to the service member is the spouse. They also found a positive link between those who stayed and the retention preference of the spouse. The survey respondents were asked to indicate the importance of their spouse's opinion and whether or not the spouse wanted them to stay in the Navy. The spouse's opinion was considered to be important by both stayers and leavers. There was a striking difference, however, between those who stayed and those who left and the retention preference of the spouse. Upwards of 90 percent of those spouses supporting retention had spouses who did in fact stay in the Navy. Conversely, for spouses preferring separation from the Navy, the proportion who had spouses staying was lower. In the case of officers 71 percent stayed: for enlisted persons only 55 percent stayed (Seboda and Szoc, 1984).

O. SUMMARY OF FACTORS AFFECTING REENLISTMENT

This chapter has reviewed some of the literature that has been written concerning the different factors influencing the reenlistment decision. These studies have

given the background needed to help in the defining of the models and the selection of the variables that were consider pertinent to this study. Actual reenlistment behavior and reenlistment intentions will be studied to determine the relationship they have with each other.

Other variables that have been selected dealing with the Navy member will include: any special pays received; the member's age, paygrade, race, education level, marital and dependent status; if the member is currently on sea-duty; the number of military moves the member has made; how satisfied with military life and how secure he or she feels about their job; and finally how the member feels about their civilian job opportunities.

This study will also examine the influence the spouse has on the military member's retention decision. To do this, the spouses age, the amount of family separation experienced, the spouses work, and the overall satisfaction the spouse has with military life will be examined.

III. METHOD OF ANALYSIS

A. RESEARCH OBJECTIVES

The four main objectives of this thesis are outlined in the following statements:

1. To demonstrate that actual reenlistment behavior can be predicted by intentions.
2. To determine if factors influencing the reenlistment decision change as time to EAOS changes.
3. To determine what factors are important/significant at various reenlistment terms.
4. To determine if the military member's spouse has an influence on the reenlistment decision, and if so which factors are important to the spouse.

B. SURVEYS USED

The data sets used for this thesis were obtained from the 1985 Department of Defense Survey of Officer and Enlisted Personnel (member survey) and the 1985 Department of Defense Survey of Military Spouses (married survey). The population from which the member survey was sampled consisted of active-duty officers and enlisted personnel from the Army, Navy, Marine Corps and Air Force who were stationed in the United States or overseas on 30 September 1984. This survey was administered to approximately 132,000 active-duty military members of which 24,805 were Navy enlisted. The spouse survey was administered to only those

spouses of active duty members who had participated in the member survey.

1. Questionnaires

The member survey questionnaire was divided into nine sections. The first section, "Military Information," collected basic data on the member such as service and pay grade. The second section, "Present and Past Locations," asked questions about the length of stay and problems encountered both at the present location and moving to the new location. Section three, "Reenlistment/Career Intent," probed the respondent's future orientation by asking his/her expected years of service, expected pay grade upon leaving the military and probable behavior under different personnel management options. The fourth section, "Individual and Family Characteristics" and the fifth section, "Dependents," focused on basic demographic characteristics, such as sex, age, marital status, and number and ages of dependents. The "Military Compensation, Benefits and Programs" section asked about the benefits received, as well as the levels of satisfaction with a broad range of family programs. The seventh and eighth sections, "Civilian Labor Force Experience" and "Family Resources," focused on the household's civilian work experience and earnings, and non-wage versus salary sources of earnings. The final section, "Military Life," queried the respondent about his/her attitude to various aspects of military life, including pay

and allowances, interpersonal environment, and benefits (medical care and commissary privileges).

The married survey questionnaire consisted of six major sections covering many of the same subjects included in the member's survey. The first section, "The Military Way of Life," asked for information about military life, including such things as base location, and problems encountered in moving and family separation. Section two, "Family Military Experience," collected information about the household, while the section on "Family Programs and Services" asked for the availability and level of satisfaction with a broad range of family programs and services. Section four asked for basic demographic information very similar to that included in the member's survey. This section was appropriately named, "Your Background." The next section, "Your Paid Work Experience," focused on civilian labor force experience and opportunities and family economic resources. The last section was a special set of questions for spouses serving in the active-duty military.

Each service was responsible for administering the questionnaire to their own members. Enlisted personnel with less than four months of service were excluded from the sample. According to the Defense Manpower Data Center, the Navy enlisted response rate was approximately 75 percent, which was considered excellent for this type of survey. The

response rate for the married survey, again provided by the Defense Manpower Data Center, was somewhat lower at 51.7 percent.

Follow-on data to the surveys consisted of a file merged into both the member's survey file and the married survey file. This merged file contained the actual reenlistment status of the individuals who had previously participated in the survey and was updated quarterly, the last up date completed in September, 1987. The member's social security number was used to match the records in each file. The follow-on status of a service member included the following categories: on active duty, left the military and did not join the reserves, left the military and joined the reserves, and retired.

2. Stratification of the Data Sets

In order to satisfy the objectives of this study, the data sets were stratified into subgroups to make it easier to estimate our models. The member survey was divided four ways:

1. By branch of service--Navy Enlisted Members were the only group needed for the study. Members who expected to retire at EAOS were deleted.

2. By term--The remaining enlisted members were divided by their current enlistment term into three groups; those on their first, their second, or third or greater enlistment term.

3. By months until end of active obligated service--The terms were further divided into three periods, determined by the time remaining on EAOS. The three periods were zero to six months, six to 12 months and 12 to 24 months.

4. By gender--As the final subdivision, the EAOS periods were stratified by gender.

The result was 18 subgroups each of which was studied separately. The married survey data was much smaller than that of the members for several reasons. First, only those who were spouses of surveyed members were selected for the spouse survey. Second, the response rate was much lower than that of the member's. Due to the smaller data set, the spouse data was stratified only by branch of service to ensure that only Navy spouses where examined, and by the service member's reenlistment term.

C. METHODS OF ANALYSIS

Multivariate or regression analysis is a statistical approach that is used to explain how changes in observed factors, independent variables, will effect another factor, the dependent variable. This method of analysis quantifies estimates of effects and allows testing to determine if a significant relationship exists between the variables. (Studenmund, 1987, p. 4-5)

A major part of this study examines the actual reenlistment decision, which is a binary event (member reenlists or does not). Multiple regression analysis is not appropriate when the dependent variable is not continuous. Several alternative statistical models that could be used for binary choice models were explored. Three types of multivariate methods are available that could be used for a

binary choice model. These are the linear probability model, the probit model and the logit model. A brief discussion of each follows.

1. Linear Probability Model

The linear probability model could be used to analyze the data if the binary dependent variable was a linear function of the explanatory variables. However, the linear probability model has some problems of estimation and prediction. The first problem noted is that the results are often heteroskedastic. This means that the variance of the error term is not constant for all observations, which produces estimates that are not efficient (i.e., not minimum variance). The major weakness with this analysis method is that predicted values can lie outside the binary range (0,1), and trying to limit them could cause the predictions to be biased (Kmenta, 1986, p. 549). For these reasons the linear probability model will not be used.

2. Probit Model

The probit model is based on a nonlinear specification which has a S-shaped curve bounded by the interval (0,1), and it is considered a good choice when dealing with binary dependent variables. However, the probit model is more complicated and harder to work with than the next model that will be discussed, so it will not be used in this study. (Kmenta, 1986, pp. 553-555)

3. Logit Model

The logit model will be used in this study for several reasons. First, this model uses a non-linear specification that, like the probit model, has a S-shaped curve, bounded by the interval (0,1). Logit analysis is based on the logistic cumulative probability distribution and is defined as

$$P_i = F(\text{alpha} + \text{beta } X_i) = F(Z) = 1/1+\exp(-\text{beta } X_i)$$

where F is a cumulative logistic probability function. The Xs are the explanatory variables and the betas are the parameters to be estimated. Second, the logit estimates can be used to calculate the change in the probability of reenlistment with respect to the independent variables. Another advantage of the logit model over the linear probability model is that it minimizes the effects of heteroscedasticity. (Kmenta, 1986, pp. 550-553)

D. DEVELOPMENT OF THE MODELS

The member's data sets, stratified by term, gender, and months until EAOS were suitable to run two different models. The output from these models made it possible to determine if intention to reenlist changes over time. The first model uses actual reenlistment behavior as the dependent variable, with a combination of demographic and satisfaction variables as well as a variable measuring the member's intention to

reenlist as explanatory variables. This model was developed to determine if actual reenlistment behavior can be explained to a large extent by the intention variable. This model, as well as the others that will be presented, is introduced here with variable acronyms which will be described later in this chapter.

[MODEL 1]

ACTUAL = F(INTEND INC ONSHIP SPECPAY CIVJOB JOBSEC
MARRIED GRADE SAT NONWHITE AGE EDUC
DEP PCS DEBT)

The second model also uses actual reenlistment behavior as the dependent variable but excludes the intention variable from the group of explanatory variables. By excluding the intention variable, the gross affects of the other explanatory variables on actual behavior can be measured as well as the specific effect of the intention variable.

[MODEL 2]

ACTUAL = F(INC ONSHIP SPECPAY CIVJOB JOBSEC MARRIED
GRADE SAT NONWHITE AGE EDUC DEP PCS DEBT)

Two models were developed to use with the spouse data set. The first model is the same as the first model for the member's data, except the married variable was excluded (since all members were married) and the variable sex was added.

[MODEL 3]

ACTUAL = F(INTEND INC ONSHIP SPECPAY CIVJOB SEX
NONWHITE EDUC DEP SAT JOBSEC GRADE DEBT AGE
PCS)

Although this model contains basically the same variables as the first two models, it had to be estimated on the smaller sample in order to establish a foundation from which to compare the results for the next model. The model uses data sets consisting of only those members who were married and whose spouses were also surveyed.

The last model combines member variables and spouse variables. This model allowed a comparison with model 3 in order to determine the spouse's influence on the reenlistment decision, and which factors were important to the spouse.

[MODEL 4]

ACTUAL = F(INC ONSHIP CIVJOB SEX NONWHITE EDUC DEP
SAT JOBSEC GRADE DEBT PCS MILSPOUS SEP
SAGE SSAT SINTEND SWORK)

E. VARIABLE DESCRIPTIONS

The variables used in the logistic model were created to match those presented in the literature review. The variable's acronyms used in the above models, and their expected impact on actual reenlistments/reenlistment intentions will be discussed in this section.

1. Actual Status of Member Following the Survey (ACTUAL)

This variable represents the actual reenlistment status of the military member who responded to the survey. By matching the status data with the member's survey responses, accurate analysis concerning what factors influence the retention decision was obtained. A dichotomous variable is used for the dependent variable. Only those individuals who remained on active duty, coded one, or left active duty for reasons other than retirement, coded zero, were retained in the sample. This variable was addended to the data set as explained earlier in this chapter.

2. Likelihood of Reenlisting (INTEND)

This variable measures the stated likelihood of the member to reenlist at the end of his/her current term. INTEND is a continuously coded variable with those who stated they intended to leave or who had no chance of reenlisting a "1," to those who were certain they were going to reenlist coded "11." All other responses were coded zero. Most of the studies from the previous chapter found that the member's reenlistment intention had a significant positive effect on the actual decision, therefore the expected sign was positive.

3. Income (INC)

The overall feeling of the member about his/her income or family income is measured with INC. The variable

is coded continuously from one ("delighted") to seven ("terrible"). Goldberg and many other researchers concluded that increased compensation produced an increase in the level of retention. It is assumed that an increase in compensation also increases the members satisfaction with his or her family income. The expected sign for the INC coefficient is negative.

4. Assigned to a Ship (ONSHIP)

This variable was dichotomously coded with one representing those members who were currently assigned to a ship and zero for those who were not. The Warner and Goldberg study found that a higher incidence of sea duty reduced reenlistment rates. Service members permanently assigned to a ship were separated from their family at a higher rate than those ashore and tended to have longer hours and more arduous working conditions. These conditions should produce a negative effect on reenlistment.

5. Receive Special Pay (SPECPAY)

SPECPAY is a dichotomous variable which was coded as one for those who receive at least one special pay and as zero for those who did not receive special pay. This pay is given to compensate service members for some difficult or risky duty. However, it is felt that this pay more than compensates for the difficulties these members face. Therefore, it is hypothesized that individuals receiving

special pay are more likely to reenlist than those who did not. SPECPAY should have a positive effect on reenlistment.

6. Likelihood of Civilian Job (CIVJOB)

This variable measured the member's assessment of their likelihood of securing a civilian job if they were to leave the service at the time of the survey. The variable is coded as a continuous variable with values from one ("no chance (0 in 10)") to 11 ("certain (10 in 10)"). Quester and Thomason found that the civilian job pull had a large effect on technical enlisted personnel, thus making them more likely to leave. Therefore, the larger the percentage of certainty the member had about securing a civilian job the more likely he was to leave the service. This variable should have a negative effect on reenlistment.

7. Satisfaction with Job Security (JOBSEC)

This variable is continuously coded with "very satisfied" equal to one and "very dissatisfied" equal to five. Cowin and O'Connor found that married people place a greater value on job security and were more likely to reenlist. As the service member's satisfaction with the level of job security provided by the Navy increased, it should have a positive effect on the probability of reenlistment.

8. Present Marital Status (MARRIED)

MARRIED is coded one for those members who were "married first time," "remarried" or "separated" and zero

for those members "single" or "divorced." As presented in the discussion of job security, married people were more likely to reenlist. Therefore, being married is expected to have a positive effect on reenlistment.

9. Paygrade of Service Member (GRADE)

This variable is coded continuously from one, "enlisted pay grade E1" to nine, "enlisted pay grade E9." Doering and Grissmer found that after 10-12 years of service, remaining in the military was almost always preferable to getting out. This showed the effect of time in service, but along with this time normally came pay grade increases. It is predicted that as this variable increases the effect on the likelihood of reenlisting or actual reenlistment behavior is positive.

10. Satisfaction with Total Navy (SAT)

This variable measures how well the Navy matched what the member expected military life to be. The variable is continuously coded from one ("strongly agree") to five ("strongly disagree"). Seboda and Szoc found that the best predictors of reenlistment intention is the level of satisfaction with life in the Navy. Increased satisfaction is expected to have a positive effect on the reenlistment decision.

11. Race/Ethnic Group (NONWHITE)

This variable is coded one and zero. One represents those who were nonwhite while zero represents whites.

Included in the nonwhite category were black, Hispanic and other. Cowin and O'Connor found that blacks were more likely to reenlist than whites. They felt this was attributed to the difficulty they might have in finding a job. This could also be true for other minorities and therefore, it is expected that NONWHITE will have a positive effect on the propensity to reenlist.

12. Age of Service Member (AGE)

The age of the service member at last birthday is coded continuously. Previous studies had indicated that an older individual had a greater probability of reenlistment. As a person gets older they become more future oriented and are less likely to change work environments. This suggests that reenlistments should be positively effected by age.

13. Education of Service Member (EDUC)

This variable measures the highest grade or year of regular school or college that the member had completed and received credit. It is continuously coded with values from one ("elementary school/1ST grade") to 20 ("college/8+ years"). An increase in the level of education should increase the ability to obtain employment in the civilian community and should, therefore, have a negative effect on reenlistment.

14. Dependents (DEP)

Dependents for this variable are defined as anyone related to the member by blood, marriage, or adoption that

depend on the member for over half of their support, excluding the spouse, are coded continuously. The codes ranged from one meaning "none" to 11 indicating "10+ dependents." Warner and Goldberg show that sailors with dependents had relatively higher levels of risk aversion due to the greater importance families place on job stability and the greater value of fringe benefits such as medical care. This variable is expected to have a positive effect on the service member's reenlistment decisions.

15. Permanent Change of Station (PCS)

This variable measures the number of times the member has moved because of a permanent change of assignment. It is coded continuously from one ("0 times moved") to 11 ("moved 10+ times"). Geographic stability was shown by Quester and Cooke and Lockman and Horowitz to have an influence on the reenlistment decision. The expected sign for this variable is negative: the more moves the member made the more apt he/she would be to get out of the military.

16. Total Amount of Debt (DEBT)

The amount of total family debt is continuously coded with one ("no debts") to seven ("$15,000+"). We expect that as total debt increased the probability of reenlisting would increase. Service members with debt are more likely to reenlist in order to provide a constant

income required to support their debt. DEBT should have a positive influence on reenlistment propensity.

17. Sex of the Member (SEX)

This is a dichotomous variable with males coded "one" and females coded "zero." Studies have shown that the members sex might have an influence on the reenlistment decision. Females might feel they have less opportunities in the civilian sector so they might reenlist at a higher rate than males. On the other hand, females might be more apt to leave the service in order to raise a family. There are no preconceived ideas regarding the expected sign for this variable.

18. Military Spouse (MILSPOUS)

This dichotomous variable is coded one if the spouse was in the armed forces and zero if the spouse was not. Seboda and Szoc found that the most influential member of the family unit is the spouse. Farkas and Durning believe that active duty females with dependents, over half of whom were married to other military members, emphasized problems of common work assignment, career planning, and child care. These female members of dual navy couples were more likely to leave the service. This variable is expected to have a negative effect on reenlistment.

19. Separation from Family (SEP)

This separation variable measured the number of months that the spouse and the member were completely

separated because of his/her military assignment during the last 12 months. It is continuously coded from one as "none" to seven indicating "11 to 12 months." Adams reported that family separation was strongly related to the decision to leave the Navy. This variable is expected to have a negative effect on reenlistment.

20. Spouse Age (SAGE)

This variable is coded continuously based on the self-reported spouses age. Weinstein and Beach found that wife stress played an important role in forming the level of wife satisfaction with the Navy. The level of stress was directly associated with the age/experience of the spouse. The older spouse experienced less stress, while the younger spouse had more. Considering this finding, the sign of the SAGE coefficient in relation to reenlistment intention/ behavior is expected to be positive as age increases.

21. Spouse Satisfaction (SSAT)

This variable measures the total satisfaction of the spouse with the military way of life. It is continuously coded from one ("very dissatisfied") to seven ("very satisfied"). Many researchers have shown that the spouse had an important impact on the reenlistment decision of the member. Therefore, the spouse's level of satisfaction played an important role in the member's decision. The expected sign of this variable is positive. If the spouse

was satisfied then the member should be more likely to reenlist.

22. Spouse Estimation of Member's Intention (SINTEND)

The likelihood of the member reenlisting as determined by the spouse is measured with this variable. This variable is coded continuously from one ("(0 in 10) no chance") to 11 ("(10 in 10) certain"). The importance of the spouse and his/her estimation of the member's intention should produce a positive propensity to reenlist.

23. Spouse Work (SWORK)

This variable measures the number of weeks in 1984 that the spouse worked for pay. This included either full or part-time employment at a civilian job, but did not count work around the house. This variable was coded continuously from one to 52. The spouse who works naturally would consider his/her career as important. Therefore, the spouse's influence could have an affect on the member's decision to remain on active duty. If the spouse's income was large enough to support the family, the member might choose to leave the service. This variable is expected to have a negative effect on reenlistment.

IV. ANALYSIS OF RESULTS

A. RESEARCH DESIGN

It has been hypothesized that the factors affecting the retention decision of male and female Navy enlisted members changes with time and enlistment term. Additionally, it was hypothesized that for married members, the spouse will also have an effect on the member's retention decision. In order to test these hypotheses, the data had to be reorganized and various statistical techniques applied to them.

The previous chapter described how the member's data were divided into smaller subsets in order to make it usable for this study. Prior to the data stratification, and after observations that were considered not applicable or irrelevant were removed, the total number of observations was 7731. After the sub-grouping, there were 18 smaller data sets, each containing a specific group that had a common EAOS period, enlistment term and sex. The SAS programs used in the stratification of the member data set as well as those used to run the required regressions are listed in Appendix A. It should be noted, however, that the sample for the third term females could not be used because of the small number of observations available for this data subset.

The married data set was divided only by term due to the small number of observations. Had the data been further divided by EAOS, there would not have been enough observations to perform the statistical analysis. The number of observations in the married data set after removing not applicable or irrelevant observations, and prior to the stratification, was 2558. Like the member's data, the size of the married sub-samples will be discussed later in the chapter. The SAS programs used to divide the married data and to run the regressions are in Appendix B.

As stated in the previous chapter, regression analysis was the basis for determining the effects that particular variables have on the reenlistment decision. Interpreting the results of the different models was complicated by the necessity of examining the various data sets from multiple directions.

B. FREQUENCY RESULTS

Frequencies for each variable were calculated for the total data set and again for each of the stratified data sets. The frequencies for the total data set are given in Table 1. Note that there may be some differences in cumulative columns due to rounding and some frequencies have been condensed and are not in the same form as originally coded. Additionally, there are several categories that have missing observations. In some instances, the person surveyed did not answer one particular question or gave a

TABLE 1

FREQUENCIES

ACTUAL REENLISTMENT BEHAVIOR

CODE	MEANING	FREQ	%	CUMUL FREQ	CUMUL %
0	LEFT THE SERVICE	2919	37.8	2919	37.8
1	REENLISTED	4812	62.2	7731	100.0

REENLISTMENT INTENTIONS
(PERCEIVED CHANCE OF REENLISTING)

CODE	MEANING	FREQ	%	CUMUL FREQ	CUMUL %
1	0 IN 10	2786	36.0	2786	36.0
2	1 IN 10	215	2.8	3001	38.8
3	2 IN 10	199	2.6	3200	41.4
4	3 IN 10	293	3.8	3493	45.2
5	4 IN 10	240	3.1	3733	48.3
6	5 IN 10	310	4.0	4043	52.3
7	6 IN 10	388	5.0	4431	57.3
8	7 IN 10	324	4.2	4755	61.5
9	8 IN 10	392	5.1	5147	66.6
10	9 IN 10	675	8.7	5822	75.3
11	10 IN 10	1909	24.7	7731	100.0

CURRENTLY ON SEA DUTY

CODE	MEANING	FREQ	%	CUMUL FREQ	CUMUL %
.	MISSING OBSERVATIONS	63	.	.	.
0	ON SHORE DUTY	5141	67.0	5141	67.0
1	ON SEA DUTY	2527	33.0	7668	100.0

SATISFACTION WITH FAMILY INCOME

CODE	MEANING	FREQ	%	CUMUL FREQ	CUMUL %
.	MISSING OBSERVATIONS	295	.	.	.
1	DELIGHTED	85	1.1	85	1.1
2	PLEASED	582	7.8	667	9.0
3	MOSTLY SATISFIED	1602	21.5	2269	30.5
4	MIXED	2967	39.9	5236	70.4

TABLE 1 (CONTINUED)

CODE	MEANING	FREQ	%	CUMUL FREQ	CUMUL %
5	MOSTLY DISSATISFIED	1344	18.1	6580	88.5
6	UNHAPPY	522	7.0	7102	95.5
7	TERRIBLE	334	4.5	7436	100.0

RECEIVING ANY TYPE OF SPECIAL PAY

CODE	MEANING	FREQ	%	CUMUL FREQ	CUMUL %
.	MISSING OBSERVATIONS	79	.	.	.
0	NO SPECIAL PAY	2134	27.9	2134	29.7
1	RECEIVES SPECIAL PAY	5518	72.1	7652	100.0

PERCEIVED CHANCE OF FINDING GOOD CIVILIAN JOB

CODE	MEANING	FREQ	%	CUMUL FREQ	CUMUL %
.	MISSING OBSERVATIONS	378	.	.	.
1-2	NO/VERY SLIGHT POSSIB	244	3.3	244	3.3
3-4	SLIGHT/SOME POSSIB	494	6.8	738	10.1
5-6	FAIR/FAIRLY GOOD POSSIB	1098	14.9	1836	25.0
7-8	GOOD POSS/PROBABLE	1491	20.3	3327	45.3
9-10	VERY PROB/ALMOST SURE	1990	27.1	5317	72.4
11	CERTAIN	2036	27.6	7353	100.0

PERCEIVED JOB SECURITY IN NAVY

CODE	MEANING	FREQ	%	CUMUL FREQ	CUMUL %
.	MISSING OBSERVATIONS	113	.	.	.
1	VERY SATISFIED	1863	24.5	1863	24.5
2	SATISFIED	3865	50.7	5728	75.2
3	NEITHER SAT/DISSAT	1440	18.9	7168	94.1
4	DISSATISFIED	275	3.6	7443	97.7
5	VERY DISSATISFIED	175	2.3	7618	100.0

TABLE 1 (CONTINUED)

MARRIED

CODE	MEANING	FREQ	%	CUMUL FREQ	CUMUL %
0	NOT MARRIED	3248	42.0	3248	42.0
1	MARRIED	4483	58.0	7731	100.0

PAYGRADE

CODE	MEANING	FREQ	%	CUMUL FREQ	CUMUL %
1	E-1	24	0.3	24	0.3
2	E-2	93	1.2	117	1.5
3	E-3	848	11.0	965	12.5
4	E-4	1643	21.3	2608	33.7
5	E-5	2555	33.0	5163	66.8
6	E-6	1792	23.2	6955	90.0
7	E-7	592	7.7	7547	97.6
8	E-8	130	1.7	7677	99.3
9	E-9	54	0.7	7731	100.0

RACE

CODE	MEANING	FREQ	%	CUMUL FREQ	CUMUL %
0	WHITE	5798	75.0	5798	75.0
1	ALL OTHER GROUPS	1933	25.0	7731	100.0

SATISFACTION WITH MILITARY LIFE

CODE	MEANING	FREQ	%	CUMUL FREQ	CUMUL %
.	MISSING OBSERVATIONS	63	.	.	.
1	VERY DISSATISFIED	656	8.6	656	8.6
2	DISSATISFIED	842	11.0	1498	19.5
3	SOMEWHAT DISSATISFIED	1395	18.2	2893	37.7
4	NEITHER SAT OR DISSAT	698	9.1	3591	46.8
5	SOMEWHAT SATISFIED	1758	22.9	5349	69.8
6	SATISFIED	1918	25.0	7262	94.8
7	VERY SATISFIED	401	5.2	7668	100.0

TABLE 1 (CONTINUED)

AGE

CODE	MEANING	FREQ	%	CUMUL FREQ	CUMUL %
18-20	AGE IN YEARS	360	4.6	360	4.6
21-25		3225	41.8	3585	46.4
26-30		2217	28.6	5802	75.0
31-35		1235	15.9	7037	90.9
36-40		525	6.8	7562	97.7
41-58		169	2.3	7731	100.0

EDUCATION LEVEL

CODE	MEANING	FREQ	%	CUMUL FREQ	CUMUL %
.	MISSING OBSERVATIONS	26	.	.	.
1-11	NON HIGH SCHOOL GRAD	222	2.8	222	2.8
12	HIGH SCHOOL GRAD	5255	68.2	5477	71.0
13-20	1 OR MORE YRS COLLEGE	2228	29.0	7705	100.0

NUMBER OF DEPENDENTS

CODE	MEANING	FREQ	%	CUMUL FREQ	CUMUL %
1	NONE	4019	52.0	4019	52.0
2	1 DEPENDENT	1647	21.3	5666	73.3
3	2 DEPENDENTS	1304	16.9	6970	90.2
4	3 DEPENDENTS	534	6.9	7504	97.1
5	4 DEPENDENTS	172	2.2	7676	99.3
6-11	5 OR MORE DEPENDENTS	55	0.7	7731	100.0

SEX

CODE	MEANING	FREQ	%	CUMUL FREQ	CUMUL %
0	FEMALE	2749	35.6	2749	35.6
1	MALE	4982	64.4	7731	100.0

TABLE 1 (CONTINUED)

NUMBER OF PERMANENT CHANGE OF STATION
SINCE JOINED THE NAVY

CODE	MEANING	FREQ	%	CUMUL FREQ	CUMUL %
.	MISSING OBSERVATIONS	39	.	.	.
1	MOVED 0 TIMES	1092	14.2	1092	14.2
2	MOVED 1 TIME	1135	14.8	2227	29.0
3	MOVED 2 TIMES	1368	17.8	3595	46.7
4	MOVED 3 TIMES	1404	18.3	4999	65.0
5	MOVED 4 TIMES	1022	13.3	6012	78.3
6-11	MOVED 5 OR MORE TIMES	1012	13.2	7692	100.0

AMOUNT OF DEBT

CODE	MEANING	FREQ	%	CUMUL FREQ	CUMUL %
.	MISSING OBSERVATIONS	207	.	.	.
1	NO DEBT	1158	15.4	1158	15.4
2	$1-$499	698	9.3	1856	24.7
3	$500-$1,999	1433	19.0	3289	43.7
4	$2,000-$4,999	1604	21.3	4893	65.0
5	$5,000-$9,999	1351	18.0	6244	83.0
6	$10,000-$14,999	697	9.3	6941	92.3
7	$15,000 +	583	7.7	7524	100.0

TIME REMAINING ON ACTIVE DUTY

CODE	MEANING	FREQ	%	CUMUL FREQ	CUMUL %
1	0 TO 6 MONTHS	1806	23.3	1806	23.3
2	6 TO 12 MONTHS	2092	27.1	3898	50.4
3	12 TO 24 MONTHS	3833	49.6	7731	100.0

CURRENT TERM OF ENLISTMENT

CODE	MEANING	FREQ	%	CUMUL FREQ	CUMUL %
1	FIRST ENLISTMENT	3703	47.9	3703	47.9
2	SECOND ENLISTMENT	2326	30.1	6029	78.0
3	ALL OTHER ENLISTMENTS	1702	22.0	7731	100.0

response that was irrelevant. To ensure the largest possible sample size, these observations were not deleted, but coded in such a manner that the missing observations would not have an effect on the outcome. Notice that in the few cases where this occurs, the values were not included in the frequency count. This allowed these same observations that had usable responses to the other questions to be included in the final analysis.

Closer examination of Table 1 allows the following observations regarding the total data set and the included variables:

1. Over 64 percent of the sample size are males.
2. Almost half of the surveyed members were on their first enlistment.
3. The third EAOS group had almost twice as many observations as the other groups. The last period was one year in length vice six months because of the method used by the survey to group data.
4. Over 50 percent of the surveyed members claimed no dependents.
5. Approximately 25 percent of the sample was an ethnic group other than white.

C. CROSS TABULATION RESULTS

A frequency of actual reenlistment behavior based on the individuals original intentions is shown in Table 2. This cross tab was calculated prior to stratifications of the data. The ACTUAL column indicates the true reenlistment decision made by the service member with "1" indicating reenlistment, and "0" leaving the Navy. The intention row

TABLE 2

TABLE OF ACTUAL REENLISTMENT BEHAVIOR
BY INTENTION TO REENLIST

ACTUAL / INTEND	0	1	2	3	4	TOTAL
0	2045	282	231	203	158	2919
	26.45	3.65	2.99	2.63	2.04	37.76
	70.06	9.66	7.91	6.95	5.41	
	73.40	39.89	24.63	14.59	8.28	
1	741	425	707	1188	1751	4812
	9.58	5.50	9.15	15.37	22.65	62.24
	15.40	8.83	14.69	24.69	36.39	
	26.60	60.11	75.37	85.41	91.72	
TOTAL	2786	707	938	1391	1909	7731
	36.04	9.15	12.13	17.99	24.69	100.00

is numbered one through four. Those members whose intentions were to leave the service or who had a "0 in 10" chance of remaining on active duty were given a "0." Those who felt they had a "1 in 10" through "3 in 10" chance of reenlisting were coded "1." Individuals coded "2" indicated their intentions were "4 in 10" through "6 in 10." Those coded "7 in 10" through "9 in 10" were given a code of "3." Finally, those coded "4" indicated their intentions were "10 in 10" to remain in the Navy.

There is some very useful insight gained from Table 2. First of all, note that as intentions increase from "0" to "4," the percent of those who actually reenlisted continuously increases from 26.6 to 91.72. Upon closer examination, this indicates that 26.6 percent of those who intended to leave the Navy, did in fact reenlist. This can

be compared to the 8.28 percent of those who had indicated they were certain they were going to reenlist but actually left the Navy.

By examining cross tab results from the stratified data sets, it can be shown that there are differences in intentions between EAOS periods, terms and sex. Using the same coding method as described above for the INTEND variable, Table 3 indicates the frequency of those who reenlisted based on their intentions, after dividing the data into the three reenlistment terms.

The results of this cross tabulation agree with those found by previous studies: the percentage of those who actually reenlisted increases as the enlistment term increases. In this case, reenlistments increased from 43.69 percent for term one to 91.60 percent for term three. An interesting aspect of these data is that the number of those who indicated they were going to leave the Navy, but actually reenlisted increased from 20.96 percent for the first term to 60.00 percent for the third term. Also interesting is that 17.11 percent of those who intended to reenlist in their first term did not; this percentage decreased to 2.83 percent for those in their third term. These results indicate that retention decisions do differ with the enlistment term the individual is currently in.

Table 4 also shows actual reenlistment decisions based on intentions, but here the data have been stratified by

TABLE 3

TABLE OF ACTUAL REENLISTMENTS BY INTENTIONS
BY REENLISTMENT TERM

TERM ONE

ACTUAL / INTEND	0	1	2	3	4	TOTAL
0	1554	179	150	119	83	2085
	41.97	4.83	4.05	3.21	2.24	56.31
	74.53	8.59	7.19	5.71	3.98	
	79.04	50.42	35.71	24.95	17.11	
1	412	176	270	358	402	1618
	11.13	4.75	7.29	9.67	10.86	43.69
	25.46	10.88	16.69	22.13	24.85	
	20.96	49.58	64.29	75.05	82.89	
TOTAL	1966	355	420	477	485	3703
	53.09	9.59	11.34	12.88	13.10	100.00

TERM TWO

ACTUAL / INTEND	0	1	2	3	4	TOTAL
0	425	92	62	61	51	691
	18.27	3.96	2.67	2.62	2.19	29.71
	61.51	13.31	8.97	8.83	7.38	
	64.89	36.95	18.79	11.84	8.84	
1	230	157	268	454	526	1635
	9.89	6.75	11.52	19.52	22.61	70.29
	14.07	9.60	16.39	27.77	32.17	
	35.11	63.05	81.21	88.16	91.16	
TOTAL	655	249	330	515	577	2326
	28.16	10.71	14.19	22.14	24.81	100.00

TERM THREE

ACTUAL / INTEND	0	1	2	3	4	TOTAL
0	66	11	19	23	24	143
	3.88	0.65	1.12	1.35	1.41	8.40
	46.15	7.69	13.29	16.08	16.78	
	40.00	10.68	10.11	5.76	2.83	
1	99	92	169	376	823	1559
	5.82	5.41	9.93	22.09	48.35	91.60
	6.35	5.90	10.84	24.12	52.79	
	60.00	89.32	89.89	94.24	97.17	
TOTAL	165	103	188	399	847	1702
	9.69	6.05	11.05	23.44	49.76	100.00

TABLE 4

TABLE OF ACTUAL REENLISTMENTS BY INTENTIONS
BY EAOS PERIOD

FIRST EAOS PERIOD

ACTUAL / INTEND	0	1	2	3	4	TOTAL
0	692	42	34	28	48	844
	38.32	2.33	1.88	1.55	2.66	46.73
	81.99	4.98	4.03	3.32	5.69	
	81.80	39.25	24.82	12.39	9.80	
1	154	65	103	198	442	962
	8.53	3.60	5.70	10.96	24.47	53.27
	16.01	6.76	10.71	20.58	45.95	
	18.20	60.75	75.18	87.61	90.20	
TOTAL	846	107	137	226	490	1806
	46.84	5.92	7.59	12.51	27.13	100.00

SECOND EAOS PERIOD

ACTUAL / INTEND	0	1	2	3	4	TOTAL
0	527	62	65	60	40	754
	25.19	2.96	3.11	2.87	1.91	36.04
	69.89	8.22	8.62	7.96	5.31	
	72.29	36.47	26.10	15.04	7.34	
1	202	108	184	339	505	1338
	9.66	5.16	8.80	16.20	24.14	63.96
	15.10	8.07	13.75	25.34	37.74	
	27.71	63.53	73.90	84.96	92.66	
TOTAL	729	170	249	399	545	2092
	34.85	8.13	11.90	19.07	26.05	100.00

THIRD EAOS PERIOD

ACTUAL / INTEND	0	1	2	3	4	TOTAL
0	826	178	132	115	70	1321
	21.55	4.64	3.44	3.00	1.83	34.46
	62.53	13.47	9.99	8.71	5.30	
	68.21	41.40	23.91	15.01	8.01	
1	385	252	420	651	804	2512
	10.04	6.57	10.96	16.98	20.98	65.54
	15.33	10.03	16.72	25.92	32.01	
	31.79	58.60	76.09	84.99	91.99	
TOTAL	1211	430	552	766	874	3833
	31.59	11.22	14.40	19.98	22.80	100.00

EAOS periods. As described earlier in the study, the EAOS periods are zero to six months, six to 12 months and 12 to 24 months. To prevent confusion, it is necessary to better define the EAOS periods, as they will be used in the rest of this study. The zero to six month period, closest to the time when the member must make the reenlistment decision, will be referred to as the first EAOS period. The second EAOS period is six to 12 months prior to the reenlistment decision, and the third EAOS period refers to the time furthest from the decision point, 12 to 23 months.

When comparing the three EAOS periods, the percentages of enlistees who intended with certainty to reenlist and who do actually reenlist remains constant at between 90 and 92 percent. The number of service members who intended to leave and actually did leave decreased from 81.80 percent for those with zero to six months remaining on active duty, to 68.21 percent for those having 12 to 24 months remaining on their current enlistment. The opposite holds true for those who intended to leave but reenlisted instead. This percentage is 18.20 for those in their first EAOS period but 31.79 percent for the third period. This seems to indicate, and common sense agrees, that the further from the decision point, the higher the chance of an individual changing his or her mind regarding retention. However, closer examination of those members who intended to reenlist, but actually left the service does not show the same pattern.

In all three periods the percentage is relatively constant, between 7.34 and 9.80 percent. In summary, these results indicate that there are differences in reenlistment intentions when examining retention behavior by EAOS period.

The remaining hypothesized difference in the stratified data is the retention differences by gender. Tables 5, 6, and 7 contain cross tabulations of reenlistment behavior based on intentions divided by sex and enlistment term. These tables are used to illustrate how retention behavior is effected by gender and enlistment term.

In the first term, as shown in Table 5, the overall reenlistment rate was 39.88 percent for males compared to 48.66 percent for females. The percentages of those who intended to leave the service, but actually reenlisted and those who intended to leave and did leave were constant for both at approximately 21 percent and 79 percent respectively. The largest differences in the first term are among those who intended to reenlist. For males, 79.59 percent actually reenlisted, while 20.41 percent did not. Females in the same categories actually reenlisted at 85.12 percent while those who changed their minds and left the service was 14.88 percent. This indicates that, in the first term, females were more sure of their retention decision than their male counter parts.

Table 6 shows cross tabs of males and females in their second term. The reenlistment rate for both genders is much

TABLE 5

TABLE OF ACTUAL REENLISTMENTS BY INTENTIONS
BY SEX FOR TERM ONE

MALES

ACTUAL / INTEND	0	1	2	3	4	TOTAL
0	967	106	86	60	40	1259
	46.18	5.06	4.11	2.87	1.91	60.12
	76.81	8.42	6.83	4.77	3.18	
	79.26	54.36	35.98	24.59	20.41	
1	253	89	153	184	156	835
	12.08	4.25	7.31	8.79	7.45	39.88
	30.30	10.66	18.32	22.04	18.68	
	20.74	45.64	64.02	75.41	79.59	
TOTAL	1220	195	239	244	196	2094
	58.26	9.31	11.41	11.65	9.36	100.00

FEMALES

ACTUAL / INTEND	0	1	2	3	4	TOTAL
0	587	73	64	59	43	826
	36.48	4.54	3.98	3.67	2.67	51.34
	71.07	8.84	7.75	7.14	5.21	
	78.69	45.63	35.36	25.32	14.88	
1	159	87	117	174	246	783
	9.88	5.41	7.27	10.81	15.29	48.66
	20.31	11.11	14.94	22.22	31.42	
	21.31	54.38	64.64	74.68	85.12	
TOTAL	746	160	181	233	289	1609
	46.36	9.94	11.25	14.48	17.96	100.00

closer than the first term, now at 69.42 percent for males and 71.86 percent for females. Unlike term one, the results for those who intended to reenlist were constant for both male and female with about 90 percent actually reenlisting and about nine percent leaving the Navy. The biggest difference between males and females in term two takes place in the intend to leave the service area. Among males who

TABLE 6

TABLE OF ACTUAL REENLISTMENTS BY INTENTIONS
BY SEX FOR TERM TWO

MALES

ACTUAL / INTEND	0	1	2	3	4	TOTAL
0	281	67	44	36	28	456
	18.85	4.49	2.95	2.41	1.88	30.58
	61.62	14.69	9.65	7.89	6.14	
	62.72	38.29	19.38	11.46	8.56	
1	167	108	183	278	299	1035
	11.20	7.24	12.27	18.65	20.05	69.42
	16.14	10.43	17.68	26.86	28.89	
	37.28	61.71	80.62	88.54	91.44	
TOTAL	448	175	227	314	327	1491
	30.05	11.74	15.22	21.06	21.93	100.00

FEMALES

ACTUAL / INTEND	0	1	2	3	4	TOTAL
0	144	25	18	25	23	235
	17.25	2.99	2.16	2.99	2.75	28.14
	61.28	10.64	7.66	10.64	9.79	
	69.57	33.78	17.48	12.44	9.20	
1	63	49	85	176	227	600
	7.54	5.87	10.18	21.08	27.19	71.86
	10.50	8.17	14.17	29.33	37.83	
	30.43	66.22	82.52	87.56	90.80	
TOTAL	207	74	103	201	250	835
	24.79	8.86	12.34	24.07	29.94	100.00

had indicated they would leave, 37.28 actually reenlisted, compared with 30.0 percent for similar females.

The last cross tabulation is shown in Table 7, which shows the difference between males and females, who are in their third or greater enlistment term. The overall reenlistment rate is now higher for males, at 92.[illegible] percent, compared with 87.54 percent for females. The percentage of

TABLE 7

TABLE OF ACTUAL REENLISTMENTS BY INTENTIONS
BY SEX FOR TERM THREE

MALES

ACTUAL / INTEND	0	1	2	3	4	TOTAL
0	48	9	14	15	19	105
	3.44	0.64	1.00	1.07	1.36	7.52
	45.71	8.57	13.33	14.29	18.10	
	36.36	10.47	8.86	4.59	2.74	
1	84	77	144	312	675	1292
	6.01	5.51	10.31	22.33	48.32	92.48
	6.50	5.96	11.15	24.15	52.24	
	63.64	89.53	91.14	95.41	97.26	
TOTAL	132	86	158	327	694	1397
	9.45	6.16	11.31	23.41	49.68	100.00

FEMALES

ACTUAL / INTEND	0	1	2	3	4	TOTAL
0	18	2	5	8	5	38
	5.90	0.66	1.64	2.62	1.64	12.46
	47.37	5.26	13.16	21.05	13.16	
	54.55	11.76	16.67	11.11	3.27	
1	15	15	25	64	148	267
	4.92	4.92	8.20	20.98	48.52	87.54
	5.62	5.62	9.36	23.97	55.43	
	45.45	88.24	83.33	88.89	96.73	
TOTAL	33	17	30	72	153	305
	10.82	5.57	9.84	23.61	50.16	100.00

those who intended to remain on active duty is similar for both sexes. However, the behavior of those who intended to leave are much different. For males, 63.64 percent reenlisted even though they had earlier indicated they were going to leave. Only 45.45 percent of the females behave the same way. The number of the males who planed to leave

and actually left was 36.36 percent, compared with 54.55 percent for females.

The results from these cross tabulations indicate that there are not only differences between males and females in their intentions and actual retention behavior, but also differences in male and female behavior across enlistment terms.

D. TECHNIQUES USED FOR ANALYSIS

Before continuing with the analysis, it is important to define the terms and techniques that were applied to both the members and married data sets. Several of the terms used in conjunction with the SAS output were "beta," "expected sign," "change in probability" and "chi-square." Beta is the coefficient or parameter of the independent variable after the model has been estimated. The expected sign, as implied, is the expected positive or negative sign of the coefficient (or beta), which indicates what direction the relationship between the dependent and this independent variable is believed to be.

As stated earlier, this study used binomial logit for its analysis technique. However, when interpreting the coefficients, it must be remembered that they represent the effect of a one unit change in the independent variable on the log of the odds of the dependent variable. (Studenmund and Cassidy, 1987, p. 175) In other words, the estimate coefficient (beta) has little meaning, except for indicating

the positive or negative relationship with the dependent variable. To make it useful, the coefficient was transformed into a value that represents the change in probability. This was accomplished by the following formula:

$$\text{change in probability} = P * (1-P) * \text{beta}$$

where P is the mean probability of the service member reenlisting for each group. This calculation yields a figure that is interpreted as the effect of a one unit change in the independent variable on the probability that an individual will reenlist.

Logit analysis is a maximum-likelihood estimation procedure. This procedure tests hypotheses with different statistics than in regression analysis. For example, the goodness of fit of the model can be tested using the likelihood ratio method. The likelihood ratio is defined as

$$\text{lambda} = L_o/L_{max}.$$

For goodness of fit, L_o represents the value of the likelihood function with only a constant term, whereas L_{max} is the value of the likelihood function with the explanatory variables. The test statistic is

$$-2 \log \text{lambda} = -2(\log L_o - \log L_{max})$$

which follows a chi-square distribution with the degrees of freedom equal to the number of parameters in the models (Pindyck and Rubinfeld, 1981, PP. 310-312). In other words, using the chi-square distribution, if the L_o value is significantly greater than the L_{max} value, the model explains a significant portion of the variance of the dependent variable, reenlistments.

The same procedure can be used to test alternative models, such as comparing Models 1 and 2 (from Chapter III). In this case L_o is the value of the likelihood function of the equation that omits the INTEND variable (constrained equation), whereas L_{max} is the value of the likelihood function for the equation that includes the INTEND variable (unconstrained equation).

The logit procedure also uses the chi-square statistic to test the significance of the parameter estimates. In this case

$$\text{chi-square} = (B/\text{s.e.}(b))^2$$

with one degree of freedom, and is closely related to the t-statistic.

E. ANALYSIS OF THE MEMBER'S DATA

1. Determining Which Model to Use

Chapter III defined the two member's models, Model 1 and Model 2, which were used to run regression analysis on the various stratified data sets. The reason both were used, was to determine the influence of the INTEND variable and to see if it, in fact, proved to be major predictor of reenlistment behavior as hypothesized.

As explained in the previous paragraphs, to determine which model would be the best to use for this study, L_o and L_{max} had to be identified and values determined from the computer output for each stratified data set. For the purpose of illustration, the first set of models that were run, (first term males with zero to six months to EAOS) will be closely examined. The model without the INTEND variable (Model 2) was considered constrained, L_o, and the -2 log (L_o) = 557.78. The unconstrained model, L_{max} (Model 1), included the INTEND variable and the -2 log (L_{max}) = 480.70. The difference between L_o and L_{max} was 77.08. As stated earlier, the chi-square critical value for the 99 percent level of confidence with one degree of freedom was 6.63. The calculated value exceeds the critical value, therefore the model that included the INTEND variable (Model 1) was determined to be a better model for this analysis. This process was completed for each of the data sets (with the exception of third term females, due to the

small number of observations). In every case, except one, the test of Model 2 against Model 1, the chi-square exceeded the 99 percent level of confidence. The one case that did not was third term males in the second EAOS period, where the value was 6.51, being significant at the 97.5 percent confidence level. The results of the chi-square calculations for each of the tests are shown in Appendix C. Model 1 was therefore determined to be the best model and was selected as the basis for the remainder of this study.

2. Analysis Procedure

This section examines the results from Model 1 run on the various data subsets of the male members. The analysis is presented in the same form for each of the subgroups, divided by enlistment term and gender. The procedure is to first summarize the significant variables found in each of the enlistment terms. Second, a table is used to assist in identifying the relationships between the independent variables and the reenlistment decision. This table is a summary of the three EAOS periods for the specified reenlistment term, and consists of the expected sign of each of the variables and the percent change in the probability of reenlistment, with the actual sign from the regression results.

The percent change in the probability of reenlistment shows how a one unit increase in the independent variable will affect the probability of

reenlisting. To illustrate this, the following example will use the change in probability of reenlistment associated with the INTEND variable for first term males in the first EAOS period. The value given in Table 11 for INTEND was 7.1 percent. This means that a one unit increase in the intention to reenlist will produce a 7.1 percent increase in the probability of reenlisting. Had the value been negative, it would mean the same percentage decrease in the reenlistment probability. This table can also be used to show what a decrease of one unit would do, but the sign of the percentage value would have to be reversed. Again using the same example, a one unit decrease in the intention to reenlist would mean an decrease of 7.1 percent in the probability of reenlistment.

In addition to the above analysis, a table of the coefficients for each of the EAOS periods within the described enlistment term is presented. The tables contain the coefficients (beta), the change in probability and the chi-square value for each independent variable. These tables also contain the number of observations in the stratified data set and the number on individuals who reenlisted. Lastly, the model chi-square value is given so that the fit of the model can be tested.

It should be noted that Model 1 had 15 degrees of freedom which means that the following critical chi-square values were applicable when determining the fit of the model

for all analysis dealing with the member's data. (Standard Mathematical Tables, 1973, p. 618)

LEVEL OF CONFIDENCE (%)	CHI-SQUARE VALUE
99.0	30.6
97.5	27.5
95.0	25.0
90.0	22.3

3. Analysis of First Term Males

The variables that were significant for first term males in at least one of the EAOS periods are discussed in detail in this section. Table 11 shows the relationships among the periods, the percent changes in the probability of reenlisting, and the expected sign of the coefficients. Tables 8-10 contain the table of estimated coefficients for each of the EAOS periods.

INTEND--Paralleling the results cited by the Rearden study, the individual service member's intention to reenlist was the most significant dependent variable. It was significant at the 99% level during each EAOS time period. The results showed that if intention to reenlist was increased by a "1 in 10" chance, the probability of reenlisting would increase 7.1 percent (at the sample mean probability).

INC--The effect of the member's overall satisfaction with family income on the reenlistment decision was significant at the 99 percent level of confidence during the first EAOS period. During the other two periods income had

TABLE 8

TABLE OF COEFFICIENTS FOR FIRST TERM MALES
FIRST EAOS PERIOD

NUMBER OF OBSERVATIONS: 516
NUMBER WHICH REENLISTED: 198

VARIABLE	BETA	CHANGE IN PROBABILITY	CHI-SQUARE
INTEND	0.300	0.071	62.17***
INC	-0.296	-0.070	8.62***
ONSHIP	-0.335	-0.079	1.86
SPECPAY	0.461	0.109	2.14
CIVJOB	-0.047	-0.011	0.78
JOBSEC	0.334	0.079	5.75**
MARRIED	0.782	0.185	7.29***
NONWHITE	0.154	0.036	0.29
GRADE	0.033	0.008	0.05
SAT	0.136	0.032	2.61
AGE	-0.077	-0.018	2.49
EDUC	-0.011	-0.003	0.01
DEP	0.087	0.021	0.31
PCS	0.036	0.008	0.29
DEBT	0.008	0.002	0.01

MODEL CHI-SQUARE = 206.46 WITH 15 DEGREES OF FREEDOM

***SIGNIFICANT AT THE 99 PERCENT CONFIDENCE LEVEL
**SIGNIFICANT AT THE 95 PERCENT CONFIDENCE LEVEL
*SIGNIFICANT AT THE 90 PERCENT CONFIDENCE LEVEL

TABLE 9

TABLE OF COEFFICIENTS FOR FIRST TERM MALES
SECOND EAOS PERIOD

NUMBER OF OBSERVATIONS: 427
NUMBER WHICH REENLISTED: 163

VARIABLE	BETA	CHANGE IN PROBABILITY	CHI-SQUARE
INTEND	0.263	0.062	41.42***
INC	0.005	0.001	0.00
ONSHIP	0.183	0.043	0.51
SPECPAY	0.193	0.046	0.44
CIVJOB	-0.060	-0.014	1.40
JOBSEC	-0.042	-0.010	0.09
MARRIED	0.633	0.149	4.96**
NONWHITE	0.280	0.066	0.88
GRADE	0.260	0.061	2.99*
SAT	0.052	0.012	0.35
AGE	0.044	0.010	0.79
EDUC	-0.060	-0.014	0.23
DEP	-0.036	-0.009	0.06
PCS	0.007	0.002	0.01
DEBT	-0.005	-0.001	0.00

MODEL CHI-SQUARE = 123.20 WITH 15 DEGREES OF FREEDOM

***SIGNIFICANT AT THE 99 PERCENT CONFIDENCE LEVEL
**SIGNIFICANT AT THE 95 PERCENT CONFIDENCE LEVEL
*SIGNIFICANT AT THE 90 PERCENT CONFIDENCE LEVEL

TABLE 10

TABLE OF COEFFICIENTS FOR FIRST TERM MALES
THIRD EAOS PERIOD

NUMBER OF OBSERVATIONS: 852
NUMBER WHICH REENLISTED: 357

VARIABLE	BETA	CHANGE IN PROBABILITY	CHI-SQUARE
INTEND	0.215	0.052	63.33***
INC	-0.012	-0.003	0.03
ONSHIP	-0.381	-0.093	4.64**
SPECPAY	0.208	0.051	1.12
CIVJOB	-0.089	-0.022	6.36**
JOBSEC	-0.224	-0.054	4.92**
MARRIED	0.266	0.065	1.63
NONWHITE	0.102	0.025	0.24
GRADE	0.298	0.073	6.67***
SAT	0.141	0.034	5.33**
AGE	0.049	0.012	1.97
EDUC	-0.059	-0.014	0.42
DEP	0.204	0.050	3.14*
PCS	-0.111	-0.027	4.23**
DEBT	-0.007	-0.002	0.01

MODEL CHI-SQUARE = 252.23 WITH 15 DEGREES OF FREEDOM

***SIGNIFICANT AT THE 99 PERCENT CONFIDENCE LEVEL
**SIGNIFICANT AT THE 95 PERCENT CONFIDENCE LEVEL
*SIGNIFICANT AT THE 90 PERCENT CONFIDENCE LEVEL

TABLE 11

SUMMARY OF CHANGES IN REENLISTMENT PROBABILITY
FOR FIRST TERM MALES
(IN PERCENT)

VARIABLE	EXPECTED SIGN	PERCENTAGE CHANGE IN PROBABILITY OF REENLISTMENT		
		0-6 MONTHS UNTIL EAOS	6-12 MONTHS UNTIL EAOS	12-24 MONTHS UNTIL EAOS
INTEND	+	7.1% ***	6.2% ***	5.2% ***
INC	-	-7.0% ***	0.1%	-.3%
ONSHIP	-	-7.9%	4.3%	-9.3% **
SPECPAY	+	10.9%	4.6%	5.1%
CIVJOB	-	-1.1%	-1.4%	-2.2% **
JOBSEC	-	7.9% **	-1.0%	-5.4% **
MARRIED	+	18.5% ***	14.9% **	6.5%
NONWHITE	+	3.6%	6.6%	2.5%
GRADE	+	0.8%	6.1% *	7.3% ***
SAT	+	3.2%	1.2%	3.4% **
AGE	+	-1.8%	1.0%	1.2%
EDUC	-	-0.3%	-1.4%	-1.4%
DEP	+	2.1%	-0.9%	5.0% *
PCS	-	0.8%	0.2%	-2.7% **
DEBT	+	0.2%	-0.1%	-0.2%

*** SIGNIFICANT AT THE 99 PERCENT CONFIDENCE LEVEL
** SIGNIFICANT AT THE 95 PERCENT CONFIDENCE LEVEL
* SIGNIFICANT AT THE 90 PERCENT CONFIDENCE LEVEL

a non significant effect on the reenlistment decision. The results showed that if the level of satisfaction decreased by one level (within seven levels) then the probability of reenlisting would decrease by 7.0 percent.

ONSHIP--ONSHIP affected first term members only during the third EAOS period. ONSHIP for this period was significant at the 95 percent level of confidence, but the effects for the other periods were nonsignificant. If a service member is serving aboard ship then the probability of reenlisting is decreased by 9.3 percent for those in the third EAOS period. One can conclude that the effects of sea duty may only be noticeable while the service member is twelve or more months away from the his or her decision point.

CIVJOB--The perceived likelihood of securing a civilian job caused a significant decrease in the reenlistment probability for the third EAOS time period, but had no significant effect during the first time period. As the member perceived likelihood increased by one increment (on an 11 point scale), the probability of reenlisting decreased by 2.2 percent.

JOBSEC--An increase in the level of dissatisfaction with job security had a significantly positive effect on reenlistment during the first period and a significantly negative effect on the third period. This variable was significant at the 95 percent level for both periods. A

decrease in the level of satisfaction with job security produced a corresponding 7.9 percent increase in the probability of reenlisting in the first period. A decrease in the level of satisfaction with job security produced a corresponding 5.4 percent decrease in the probability of reenlisting for personnel in the third EAOS period. The negative sign for the third EAOS period was predicted, however the positive sign for the first period was not expected. There is no obvious explanation for the difference.

MARRIED--Analogous with the Cowin and O'Connor study, being married had a significant, positive effect on the member's reenlistment decision during the first and second periods. During these periods this variable was significant to the 99 percent and 95 percent level of confidence, respectively. The probability of reenlisting increased for those individuals who were married by 18.5 percent for those in the first period and 14.9 percent for those in the second. This positive sign was as expected.

GRADE--The service member's grade had a significant, positive effect on reenlistment during the second and third EAOS periods. The level of significance was 90 percent and 99 percent level of confidence, respectively. An increase in pay grade changes the probability of reenlisting by 6.1 percent for the second period and 7.3 percent for the third

period. The sign was positive as expected for this variable.

SAT--The probability of reenlisting for service members in the third EAOS period decreases by 3.4 percent as the level of satisfaction decreases. Satisfaction was significant at the 95 percent level for members in this EAOS period.

DEP--The number of dependents had a significantly positive effect on the first term male reenlistment within this sample for males in the third EAOS group. This variable was significant at the 90 percent level and the positive sign was expected. An increase in the number of dependents produces a 5.0 percent increase in the member's probability to reenlist.

PCS--As found by Warner and Goldberg, Quester and Cooke, and Lockman and Horowitz, the results from the 12 to 24 months until EAOS data sets show that the number of PCS moves negatively influences the reenlistment decision. During this early period, PCS was significant at a 95 percent level of confidence. As the number of moves increases, the probability of reenlisting decreases by 2.7 percent.

4. Analysis of Second Term Males

The variables that are significant for second term males in at least one of the EAOS periods are discussed in this section. Table 12 shows the relationships between the

TABLE 12

SUMMARY OF CHANGES IN REENLISTMENT PROBABILITY
FOR SECOND TERM MALES
(IN PERCENT)

VARIABLE	EXPECTED SIGN	PERCENTAGE CHANGE IN PROBABILITY OF REENLISTMENT		
		0-6 MONTHS UNTIL EAOS	6-12 MONTHS UNTIL EAOS	12-24 MONTHS UNTIL EAOS
INTEND	+	8.0% ***	5.6% ***	3.6% ***
INC	-	3.5%	-1.0%	-0.1%
ONSHIP	-	-23.1% **	-14.1% **	6.6%
SPECPAY	+	14.2%	-0.6%	5.6%
CIVJOB	-	-1.0%	-1.4%	-0.9%
JOBSEC	-	0.2%	-0.3%	-0.3%
MARRIED	+	-6.8%	-5.5%	-2.1%
NONWHITE	+	15.3%	8.3%	15.1% ***
GRADE	+	9.7% *	9.1% **	9.2% ***
SAT	+	7.8% **	3.5%	4.9% ***
AGE	+	-1.3%	3.6% ***	1.2%
EDUC	-	-2.7%	-4.3%	-3.6% *
DEP	+	8.4% *	-2.3%	2.9%
PCS	-	-2.0%	-2.1%	-0.6%
DEBT	+	2.0%	-0.6%	-3.3% **

*** SIGNIFICANT AT THE 99 PERCENT CONFIDENCE LEVEL
** SIGNIFICANT AT THE 95 PERCENT CONFIDENCE LEVEL
* SIGNIFICANT AT THE 90 PERCENT CONFIDENCE LEVEL

periods as well as the percent changes in the probability of reenlisting and the expected signs of the coefficients. The tables of coefficients for the EAOS periods are found in Appendix D.

The following variables are significant at the 90 percent or greater confidence level: INTEND, ONSHIP, NONWHITE, GRADE, SAT, AGE, EDUC, DEP and DEBT.

The INTEND variable is significant during all EAOS periods at the 99 percent level. GRADE becomes less significant the closer the member comes to EAOS. Debt is significant at the 95 percent level during the third EAOS period but the sign is not as expected.

5. Analysis of Third Term Males

The results of the model for male service members in their third term are summarized in this section. The significant variables with a level of confidence of at least 90 percent, as identified in Table 13, are: INTEND, INC, JOBSEC, NONWHITE, GRADE, SAT, AGE and PCS. Tables of coefficients for the three EAOS periods are again found in Appendix D.

Although the INTEND variable was significant for all three periods, it was significant at the 95 percent level of confidence for the second EAOS period. This was the only instance when this variable was not significant at the 99 percent level in the member's data sets. No other distinguishing patterns seem evident in this term.

TABLE 13

SUMMARY OF CHANGES IN REENLISTMENT PROBABILITY
FOR THIRD TERM MALES
(IN PERCENT)

VARIABLE	EXPECTED SIGN	PERCENTAGE CHANGE IN PROBABILITY OF REENLISTMENT		
		0-6 MONTHS UNTIL EAOS	6-12 MONTHS UNTIL EAOS	12-24 MONTHS UNTIL EAOS
INTEND	+	2.5% ***	1.4% **	1.0% ***
INC	-	-0.1%	-0.3%	3.3% ***
ONSHIP	-	3.1%	-3.6%	-0.2%
SPECPAY	+	4.7%	3.4%	2.1%
CIVJOB	-	-0.8%	0.2%	-0.2%
JOBSEC	-	-3.6%	-2.8%	-2.1% *
MARRIED	+	-3.2%	3.6%	-1.3%
NONWHITE	+	10.6%	9.4% *	2.1%
GRADE	+	6.9% *	2.0%	8.6% ***
SAT	+	-1.7%	1.2%	2.0% **
AGE	+	0.2%	1.1% **	-0.2%
EDUC	-	-2.2%	-1.7%	1.2%
DEP	+	-3.4%	-0.5%	-1.4%
PCS	-	-0.6%	0.0%	-0.8% *
DEBT	+	-0.5%	0.5%	-1.0%

*** SIGNIFICANT AT THE 99 PERCENT CONFIDENCE LEVEL
** SIGNIFICANT AT THE 95 PERCENT CONFIDENCE LEVEL
* SIGNIFICANT AT THE 90 PERCENT CONFIDENCE LEVEL

6. Analysis of First Term Females

As indicated in Table 14 the variables that are significant at least at the 90 percent level of confidence for first term females are: INTEND, INC, CIVJOB, NONWHITE, GRADE, SAT, AGE and PCS. Appendix D contains tables of coefficients for the three EAOS periods.

When examining the results of this stratified data, INTEND was found to be significant at the 99 percent level for all EAOS periods. GRADE was also found to significant for all three periods, but less significant in the first than the other two. Although significant, the signs for INC and AGE are not as expected during the third EAOS period. There is no obvious explanation for these differences.

7. Analysis of Second Term Females

The variables that were significant in at least one EAOS period and listed in Table 15 are: INTEND, INC, ONSHIP, CIVJOB, JOBSEC, NONWHITE, GRADE, SAT, AGE, EDUC, DEP, and DEBT. As with the previous terms, tables containing the coefficients for the three EAOS periods are found in Appendix D.

INTEND and NONWHITE were significant at the 99 percent level during all EAOS periods. The second EAOS period had a larger number of significant variables relative to the other EAOS periods. Three variables; INC, AGE and DEP, had unexpected signs with no apparent reason for these differences.

TABLE 14

SUMMARY OF CHANGES IN REENLISTMENT PROBABILITY
FOR FIRST TERM FEMALES
(IN PERCENT)

VARIABLE	EXPECTED SIGN	PERCENTAGE CHANGE IN PROBABILITY OF REENLISTMENT		
		0-6 MONTHS UNTIL EAOS	6-12 MONTHS UNTIL EAOS	12-24 MONTHS UNTIL EAOS
INTEND	+	8.0% ***	7.2% ***	4.6% ***
INC	-	2.2%	1.4%	5.5% **
ONSHIP	-	16.7%	3.3%	3.2%
SPECPAY	+	-1.9%	5.6%	1.8%
CIVJOB	-	-2.8% **	-1.3%	-1.3%
JOBSEC	-	2.0%	-0.9%	-0.5%
MARRIED	+	1.4%	7.0%	3.0%
NONWHITE	+	12.8%	24.0% ***	14.8% **
GRADE	+	5.1% *	16.1% ***	12.0% ***
SAT	+	4.9%	3.0%	4.9% **
AGE	+	-2.9% **	-0.7%	-0.8%
EDUC	-	-1.3%	-1.2%	-2.4%
DEP	+	-0.6%	-6.0%	-1.6%
PCS	-	3.7%	-4.0% *	0.8%
DEBT	+	-0.2%	-0.3%	0.0%

*** SIGNIFICANT AT THE 99 PERCENT CONFIDENCE LEVEL
** SIGNIFICANT AT THE 95 PERCENT CONFIDENCE LEVEL
* SIGNIFICANT AT THE 90 PERCENT CONFIDENCE LEVEL

TABLE 15

SUMMARY OF CHANGES IN REENLISTMENT PROBABILITY
FOR SECOND TERM FEMALES
(IN PERCENT)

VARIABLE	EXPECTED SIGN	PERCENTAGE CHANGE IN PROBABILITY OF REENLISTMENT		
		0-6 MONTHS UNTIL EAOS	6-12 MONTHS UNTIL EAOS	12-24 MONTHS UNTIL EAOS
INTEND	+	11.0% ***	5.1% ***	5.8% ***
INC	-	-3.6%	13.1% **	-1.2%
ONSHIP	-	-2.1%	-69.6% ***	-9.3%
SPECPAY	+	4.6%	-17.2%	-6.4%
CIVJOB	-	1.7%	-4.5%	-2.2% **
JOBSEC	-	13.7%	4.3%	-7.6% **
MARRIED	+	-16.9%	13.4%	4.4%
NONWHITE	+	71.9% ***	60.7% ***	23.5% ***
GRADE	+	16.0%	25.7% ***	8.6% **
SAT	+	-4.1%	16.3% ***	0.0%
AGE	+	-3.3% *	0.7%	0.8%
EDUC	-	12.4% *	-11.9% ***	-0.8%
DEP	+	1.2%	-18.6% ***	-0.1%
PCS	-	-0.5%	-3.5%	3.3%
DEBT	+	9.3% *	-1.8%	1.6%

*** SIGNIFICANT AT THE 99 PERCENT CONFIDENCE LEVEL
** SIGNIFICANT AT THE 95 PERCENT CONFIDENCE LEVEL
* SIGNIFICANT AT THE 90 PERCENT CONFIDENCE LEVEL

F. MARRIED ANALYSIS

1. Determining the Married Models

The two married models, Model 3 and Model 4, were identified in Chapter III of this study. Both models were regressed on the stratified married data sets to determine the influence of the spouse variables on the member's reenlistment decision. The same chi-square test is used to determine which model was the best to use. Model 3 was identified as constrained and Model 4 as unconstrained, due to the addition of the spouse variables. After determining the chi-square values for the three terms for each of the models, Model 4 was chosen as the better model to use in the analysis because it predicted the retention decision of the member better than the other model. The results of the chi-square tests for the married data are in Appendix E.

2. Analysis Procedure

The procedure of this section will closely follow that of the member's analysis. However, the data has been stratified only by term so there will be only one section. The tables are presented as in the earlier sections of this chapter. In order to determine the fit of the model, the following chi-square values and level of significance are applicable with 21 degrees of freedom. (Standard Mathematical Tables, 1973, p. 618)

LEVEL OF CONFIDENCE (%)	CHI-SQUARE VALUE
99.0	38.9
95.0	32.7
90.0	29.6

3. Analysis of Married Data

The variables that are significant in at least one of the enlisted terms are discussed in detail in this summary. Tables 16-18 summarize each of the terms and Table 19 shows the relationship that exists between the reenlistment terms.

INTEND--This variable is significant at the 99 percent level of confidence in the first and second terms. An increase in the perceived chance of reenlisting produced a corresponding increase in the probability of reenlisting from between 4.0 and 1.6 percent respectively.

INC--INC is significant at the 90 percent level of confidence in the third term. A decrease in the level of satisfaction with total family income decreased the probability of reenlisting by 1.8 percent.

SPECPAY--The first term married data set finds this variable to be significant at the 90 percent level of confidence. Receiving at least one special pay increases the probability of reenlisting by 18.0 percent.

DEP--The number of dependents of married members was significant in the second and third terms at the 90 percent level of confidence. Adding an additional dependent to the

TABLE 16

TABLE OF COEFFICIENTS FOR FIRST TERM MARRIED MEMBERS WITH SPOUSE VARIABLES

NUMBER OF OBSERVATIONS: 351
NUMBER WHICH REENLISTED: 194

VARIABLE	BETA	CHANGE IN PROBABILITY	CHI-SQUARE
INTEND	0.169	0.040	7.73***
INC	-0.113	-0.027	0.77
ONSHIP	-0.327	-0.077	0.77
SPECPAY	0.761	0.180	3.55*
CIVJOB	0.021	0.005	0.10
SEX	0.318	0.075	0.55
NONWHITE	0.485	0.115	1.24
EDUC	0.005	0.001	0.00
DEP	0.017	0.004	0.01
SAT	-0.028	-0.007	0.06
JOBSEC	-0.190	-0.045	1.12
GRADE	-0.037	-0.009	0.04
DEBT	-0.060	-0.014	0.39
AGE	-0.010	-0.002	0.03
PCS	-0.073	-0.017	0.59
MILSPOUS	-0.040	-0.009	0.00
SEP	0.111	0.026	1.22
SAGE	-0.001	0.000	0.00
SSAT	0.110	0.026	1.35
SINTEND	0.162	0.038	8.75***
SWORK	0.006	0.001	0.45

MODEL CHI-SQUARE = 93.27 WITH 21 DEGREES OF FREEDOM

***SIGNIFICANT AT THE 99 PERCENT CONFIDENCE LEVEL
**SIGNIFICANT AT THE 95 PERCENT CONFIDENCE LEVEL
*SIGNIFICANT AT THE 90 PERCENT CONFIDENCE LEVEL

TABLE 17

TABLE OF COEFFICIENTS FOR SECOND TERM MARRIED MEMBERS WITH SPOUSE VARIABLES

NUMBER OF OBSERVATIONS: 705
NUMBER WHICH REENLISTED: 590

VARIABLE	BETA	CHANGE IN PROBABILITY	CHI-SQUARE
INTEND	0.117	0.016	6.64***
INC	-0.095	-0.013	0.76
ONSHIP	0.462	0.063	2.35
SPECPAY	-0.467	-0.064	2.12
CIVJOB	-0.012	-0.002	0.07
SEX	-0.417	-0.057	1.69
NONWHITE	0.274	0.037	0.74
EDUC	-0.062	-0.009	0.33
DEP	0.194	0.026	2.92*
SAT	0.129	0.018	1.95
JOBSEC	-0.026	-0.004	0.03
GRADE	0.109	0.015	0.40
DEBT	-0.077	-0.011	0.99
AGE	-0.062	-0.008	2.36
PCS	0.004	0.000	0.00
MILSPOUS	-0.461	-0.063	0.81
SEP	0.109	0.015	2.20
SAGE	0.019	0.003	0.48
SSAT	0.018	0.002	0.06
SINTEND	0.109	0.015	5.44**
SWORK	0.007	0.001	1.11

MODEL CHI-SQUARE = 94.46 WITH 21 DEGREES OF FREEDOM

***SIGNIFICANT AT THE 99 PERCENT CONFIDENCE LEVEL
**SIGNIFICANT AT THE 95 PERCENT CONFIDENCE LEVEL
*SIGNIFICANT AT THE 90 PERCENT CONFIDENCE LEVEL

TABLE 18

TABLE OF COEFFICIENTS FOR THIRD TERM MARRIED MEMBERS WITH SPOUSE VARIABLES

NUMBER OF OBSERVATIONS: 792
NUMBER WHICH REENLISTED: 754

VARIABLE	BETA	CHANGE IN PROBABILITY	CHI-SQUARE
INTEND	0.101	0.005	2.02
INC	-0.392	-0.018	3.72*
ONSHIP	0.341	0.016	0.48
SPECPAY	0.054	0.002	0.01
CIVJOB	0.030	0.001	0.16
SEX	0.556	0.025	0.91
NONWHITE	0.530	0.024	0.75
EDUC	0.048	0.002	0.12
DEP	0.323	0.015	3.23*
SAT	-0.151	-0.007	0.80
JOBSEC	-0.113	-0.005	0.24
GRADE	0.786	0.036	9.45***
DEBT	0.120	0.005	0.84
AGE	0.020	0.001	0.11
PCS	-0.041	-0.002	0.22
MILSPOUS	-0.843	-0.039	1.02
SEP	0.132	0.006	1.21
SAGE	-0.029	-0.001	0.41
SSAT	0.253	0.012	4.25**
SINTEND	0.158	0.007	5.68**
SWORK	-0.006	0.000	0.30

MODEL CHI-SQUARE = 77.67 WITH 21 DEGREES OF FREEDOM

***SIGNIFICANT AT THE 99 PERCENT CONFIDENCE LEVEL
**SIGNIFICANT AT THE 95 PERCENT CONFIDENCE LEVEL
*SIGNIFICANT AT THE 90 PERCENT CONFIDENCE LEVEL

TABLE 19

SUMMARY OF CHANGES IN REENLISTMENT PROBABILITY
FOR MEMBERS INCLUDING SPOUSE VARIABLES
(IN PERCENT)

VARIABLE	EXPECTED SIGN	PERCENTAGE CHANGE IN PROBABILITY OF REENLISTMENT: FIRST TERM MEMBERS	SECOND TERM MEMBERS	THIRD TERM MEMBERS
INTEND	+	4.0% ***	1.6% ***	0.5%
INC	-	-2.7%	-1.3%	-1.8% *
ONSHIP	-	-7.7%	6.3%	1.6%
SPECPAY	+	18.0% *	-6.4%	0.2%
CIVJOB	-	0.5%	-0.2%	0.1%
SEX	?	7.5%	-5.7%	2.5%
NONWHITE	+	11.5%	3.7%	2.4%
EDUC	-	0.1%	-0.9%	0.2%
DEP	+	0.4%	2.6% *	1.5% *
SAT	+	-0.7%	1.8%	-0.7%
JOBSEC	-	-4.5%	-0.4%	-0.5%
GRADE	+	-0.9%	1.5%	3.6% ***
DEBT	+	-1.4%	-1.1%	0.5%
AGE	+	-0.2%	-0.8%	0.1%
PCS	-	-1.7%	0.0%	-0.2%
MILSPOUS	-	-0.9%	-6.3%	-3.9%
SEP	-	2.6%	1.5%	0.6%
SAGE	+	0.0%	0.3%	-0.1%
SSAT	+	2.6%	0.2%	1.2% **
SINTEND	+	3.8% ***	1.5% **	0.7% **
SWORK	+	0.1%	0.1%	0.0%

*** SIGNIFICANT AT THE 99 PERCENT CONFIDENCE LEVEL
** SIGNIFICANT AT THE 95 PERCENT CONFIDENCE LEVEL
* SIGNIFICANT AT THE 90 PERCENT CONFIDENCE LEVEL

family increases the probability of reenlisting by 2.6 percent in the second term and 1.5 percent in the third term.

GRADE--This variable has a significant effect on reenlistment in the third term at 99 percent level of confidence. As the member's grade increased the probability of reenlisting increased by 3.6 percent.

SSAT--This variable had a significant positive effect to married members in their third term. It was significant at the 95 percent level of confidence and increased the probability of reenlisting by 1.2 percent. This sign was as expected.

SINTEND--This variable was significant during all terms for this married data set. The first term level of confidence was 99 percent and the other terms produced a level of 95 percent. An increase in the spouses assessment of the members likelihood in reenlisting caused an increase in the probability of reenlisting of 3.8, 1.5 and 0.7 percent respectively. This sign was as predicted.

G. SUMMARY OF ANALYSIS

This analysis started with the examination of the frequencies and cross tabulations of the total member data set, which gave the background used for this study. In order to estimate the models that had been defined earlier, the member's data was stratified by enlistment term, EAOS period and gender. The married data was stratified by

enlistment term only. After the regressions were completed, significant variables were identified and changes in the reenlistment probability were determined for the variables in the stratified groups. The final section of this analysis looks for trends that influence the retention decision. The trends have been summarized by the goals of this paper, first looking at intentions, then enlistment terms, then EAOS periods, and finally the married data results.

1. Intentions

The intention variable is significant at the 99% confidence level for members in both data sets, in all reenlistment terms, for both males and females and for all EAOS periods, with two exceptions. For the third term males six to 12 months before EAOS, it was significant only at the 95% level of confidence, and for the third term married subgroup it was not significant at all.

2. Enlistment Terms

This stratification of the data had the most obvious change or influence on the reenlistment decision in this study. The following points show those variables that had consistent effects, and those whose effects had major changes across the terms:

1. SPECPAY was not significant during any term.
2. MARRIED was significant for males during the first term only.
3. GRADE was significant in all terms.

4. AGE was not significant in the first term but had some significant in the second and third terms.

5. EDUC was significant during the second term only.

6. DEBT was significant during some EAOS periods in the second term.

7. INC had a negative effect on reenlistment for first term males and a positive effect in the third term males.

3. Gender

The service member's sex played an important role in determining what factors influence reenlistment decisions. The important trends observed are:

1. JOBSEC was significant for males only in the first term but was significant for females only during the second term.

2. MARRIED was significant for males only in the first term.

3. NONWHITE was significant for males during the first term but was significant for females during the second term.

4. INC was negatively significant for first term males and positively significant for first term females.

5. AGE had a negative relationship when it was significant for females, and a positive relationship when significant for males.

4. EAOS Period

The results of the EAOS periods were not as evident as those for the other areas. Additionally, these results may not be as reliable as the other sections of this study, due to the length of time between the third EAOS period and the actual reenlistment decision. Those trends are:

1. GRADE, SAT and PCS were all more significant in the third EAOS period than the other two.

2. JOBSEC had a positive effect on reenlistment for male members in the zero to six month period before EAOS and had a negative effect for males twelve to 24 months before EAOS.

3. EDUC had a significantly positive effect on reenlistment for second term females zero to six months before EAOS and a significantly negative on those six to 12 months before EAOS.

5. Married Data Compared to the Member's Data

This section compares the results of the member's data with those of the married data. The findings are summarized below:

1. SPECPAY was significant for first term members within the married data set but was not significant for first term members in the member data set.

2. NONWHITE was not significant in the married data set but was significant for the member's data set.

3. GRADE for married members was only significant in the third term.

4. DEP was important for the married data set second and third term yet in the member's data set the pattern was not the same.

5. SINTEND was significant during all three terms.

6. SSAT was significant during the third term for the married data set.

7. EDUC was important for second term member's data set but was not important for the second term married data set.

8. CIVJOB was never important to members in the married data set but was significant in the first and second term member's data set.

9. INC was negative in the married data set during the third term but was positive in the member's data set during the third term.

10. ONSHIP had a positive effect during the second and third terms in the married data set but had a negative effect during the same terms in the member's data set.

V. CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

Based on the patterns and empirical results in Chapter IV, the following conclusions have been developed.

1. Stated Intentions Do Predict Actual Reenlistment Behavior

The performance of the intentions variables in predicting actual behavior has been verified throughout this thesis. The cross tab results, the chi-square significance tables and the goodness-of-fit tests results all confirm that intentions closely predict actual reenlistment behavior.

Cross tab results show that intention is a more accurate predictor of behavior when the individual felt he or she has better than "7 in 10" chance of reenlisting. The accuracy of intention dropped as the member's perceived probability of reenlisting decreases. The significance of the INTEND variable throughout the data sets has been consistently above the 99 percent level. Within this data set, no matter how it was stratified, the INTEND variable has proven the most accurate predictor of actual reenlistment. Not only is the intend variable highly significant within each data set, but it also plays an important role in determining the fit of the model. Results from testing the models for goodness of fit show that models

which contain the INTEND variable or SINTEND variable have been better predictors of actual reenlistment behavior than the models without those variables.

2. Factors Influencing the Reenlistment Decision Change as the Reenlistment Term Changes

Through the use of cross tabulation and the results of the regressions, this study has shown that there is a difference in reenlistment behavior among terms. This behavior is based on changes in the factors which affect the reenlistment decision for members in those terms.

Cross tabulations show that the basic difference in term behavior is that reenlistments increases as the term increases. This effect has been noted by other studies and is confirmed by common sense. However, other studies have concentrated only on one or two terms and never examined significant factors over the entire term spectrum. Data stratified by term, such as that used in this study, produce results which show that the impact on reenlistment of factors such as grade, job security, non-white, and satisfaction with the Navy, change in level of significance from term to term.

3. Factors Influencing the Reenlistment Decision Differ Between Males and Females

Common sense dictates that there should be a difference in factors influencing the reenlistment decision between males and females, but little research has been done to identify those differences. Cross tabulations indicate

that females are more sure of their retention decision than their male counterparts. These results show there are differences between males and females in their intentions and actual retention behavior, as well as differences by gender within term. The changing significant variables surfacing from the stratified data sets also support the male/female distinction. Variables such as INC, MARRIED, NONWHITE an CIVJOB have significantly different effects on male and female service members.

4. Factors Influencing the Reenlistment Decision Change as Periods Before EAOS Change

Although the results for data stratified by EAOS may not be as reliable as other portions of the study, the cross tabulation results show that the change between EAOS periods occurs mainly with those individuals who say they are going to leave the service. Those who intend to reenlist in the first, second and third EAOS periods do not change their minds as often as those who say they are going to leave the Navy in those same periods. This change of decision makes various factors more significant during EAOS periods that are further from the reenlistment date. Therefore, factors such as GRADE, NONWHITE, SAT and PCS are significant in the third period and are less significant in EAOS periods closer to the reenlistment decision.

5. Spouse/Family Has Significant Influence on the Member's Reenlistment Decision

The influence of the spouse or family on the member's reenlistment decision has been shown to be important by both the level of significance of the spouse variables, and by the improved fit of the model which included those variables.

B. RECOMMENDATIONS

In order to maintain readiness, it is important that the Navy retain the enlisted members in whom it has invested valuable training. Not only is it cost-effective to retain technically trained, experienced members, but with the expected decrease in the Navy budget, decreasing youth population and increasing competition from the civilian sector, the Navy cannot afford to lose currently trained manpower. In fact, the Navy should increase retention efforts. Based on the results of this study, several recommendations can be made regarding the retention of Navy enlisted members.

First, the Navy should not give up on the reenlistment possibility of the service member. Results of this study clearly indicate that even though the member states his or her intentions are to leave the service, a large percentage change their mind and actually reenlist.

Second, Career Counselors should emphasize the factors that are important to the potential reenlistee at the proper

time. The Navy should make efforts to capitalize on the differences found between male and female members, married or single, in different enlistment terms and EAOS periods. It makes sense to tailor reenlistment counseling to the factors important to the service member at a particular point in time. For example, the perceived likelihood of finding a civilian job was significant in the first term. Therefore, the counselor should emphasize the advantages the Navy can offer over civilian opportunities, if the member is in his or her first term. Another example deals with married members. Special pays were significant for those married members in their first term. Therefore, that is the time when pay advantages should be stressed.

The third recommendation deals specifically with married members. This study has shown that family and spouse factors have a significant influence on the retention decision of the service member, therefore, the spouse should be actively included in the retention process. As an example, spouses should be involved in retention interviews. An effort needs to be made to better inform the spouse of the benefits the Navy offers the family as a whole. T h e last recommendation concerns the Navy's retention program. Increased emphasis needs to be placed at all levels in the Navy to increase retention awareness. Not only do career counselors need to know what factors are important to the prospective reenlistee, but every person in the chain of

command should understand what is necessary to maintain the Navy's enlisted members.

C. FUTURE STUDIES

After completing this study, three areas were identified and are recommended as possible topics for future investigation.

First of all, as explained earlier, the data sets that were used for this study did not include information regarding Selective Reenlistment Bonuses (SRB). There have been many studies conducted concerning SRBs that have shown it to be an important factor in the reenlistment decision. Had SRB data been available, it would have been a valuable addition to this study. It is recommended that SRB questions be included as part of any follow-on survey to the 1985 DOD study.

Another improvement that could be made to this study would be to use cohort data rather than the snapshot in time the 1985 DOD survey gives. If information could be obtained from the same individuals over time, i.e., at the EAOS periods and enlistment terms, a better understanding of the importance of the various factors that influence the reenlistment decision could be attained.

The final recommendation would be to conduct the same type of analysis used by this study on specific Navy ratings or career groups. This would assist in developing a better

understanding of how the factors influencing retention differ between those career groups.

APPENDIX A

PROGRAMMING CODE FOR MEMBER DATA

CODE FOR CREATING STRATIFIED DATA SETS

```
//TERM JOB (9911,9999),'DATA SETS',CLASS=G
//   EXEC SAS,REGION=2000K
//WORK DD UNIT=SYSDA,SPACE=(CYL,(60,10))
//PROJECT DD DISP=SHR,DSNAME=MSS.F3964.NAVYEN
//ELT1ML6 DD DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
//      SPACE=(CYL,(4,4),RLSE),DSN=MSS.S9911.ELT1ML6
//ELT1ML12 DD DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
//      SPACE=(CYL,(4,4),RLSE),DSN=MSS.S9911.ELT1ML12
//ELT1MG12 DD DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
//      SPACE=(CYL,(4,4),RLSE),DSN=MSS.S9911.ELT1MG12
//ELT2ML6 DD DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
//      SPACE=(CYL,(4,4),RLSE),DSN=MSS.S9911.ELT2ML6
//ELT2ML12 DD DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
//      SPACE=(CYL,(4,4),RLSE),DSN=MSS.S9911.ELT2ML12
//ELT2MG12 DD DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
//      SPACE=(CYL,(4,4),RLSE),DSN=MSS.S9911.ELT2MG12
//ELT3ML6 DD DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
//      SPACE=(CYL,(4,4),RLSE),DSN=MSS.S9911.ELT3ML6
//ELT3ML12 DD DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
//      SPACE=(CYL,(4,4),RLSE),DSN=MSS.S9911.ELT3ML12
//ELT3MG12 DD DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
//      SPACE=(CYL,(4,4),RLSE),DSN=MSS.S9911.ELT3MG12
//ELT1FL6 DD DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
//      SPACE=(CYL,(4,4),RLSE),DSN=MSS.S9911.ELT1FL6
//ELT1FL12 DD DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
//      SPACE=(CYL,(4,4),RLSE),DSN=MSS.S9911.ELT1FL12
//ELT1FG12 DD DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
//      SPACE=(CYL,(4,4),RLSE),DSN=MSS.S9911.ELT1FG12
//ELT2FL6 DD DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
//      SPACE=(CYL,(4,4),RLSE),DSN=MSS.S9911.ELT2FL6
//ELT2FL12 DD DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
//      SPACE=(CYL,(4,4),RLSE),DSN=MSS.S9911.ELT2FL12
//ELT2FG12 DD DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
//      SPACE=(CYL,(4,4),RLSE),DSN=MSS.S9911.ELT2FG12
//ELT3FL6 DD DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
//      SPACE=(CYL,(4,4),RLSE),DSN=MSS.S9911.ELT3FL6
//ELT3FL12 DD DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
//      SPACE=(CYL,(4,4),RLSE),DSN=MSS.S9911.ELT3FL12
//ELT3FG12 DD DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
//      SPACE=(CYL,(4,4),RLSE),DSN=MSS.S9911.ELT3FG12
//SYSIN    DD *
DATA ALL;
     SET PROJECT.NAVYEN;
     RENAME O36E35 = AGE;
     RENAME O67E64 = DEP;
IF E42 = -1 THEN EDUC = .;
  ELSE EDUC = E42;
IF O5E5 > 9 THEN GRADE = .;
  ELSE GRADE = O5E5;
IF STATUS=1 THEN ACTUAL=1;
IF (STATUS>1 AND STATUS< 4) THEN ACTUAL=0;
IF STATUS = 4 THEN DELETE;
IF O81E77A = 1 THEN SPECPAY = 0;
  IF O81E77A = 2 THEN SPECPAY = 1;
IF O81E77A= -1 THEN SPECPAY = .;
IF E30=-8 OR (E30 =-1) OR (E30 =-5) THEN DELETE;
IF E30=-6 OR E30 = 1 THEN INTEND=1;
ELSE INTEND = E30;
IF O106E102<1 THEN INC =.;
 ELSE INC =O106E102;
IF O4E4=1 THEN ONSHIP=1;
IF O4E4=2 THEN ONSHIP=0;
IF O4E4 = -1 THEN ONSHIP = .;
IF O96E92 < 1 THEN CIVJOB= .;
 ELSE CIVJOB = O96E92;
IF O109105M<1 THEN JOBSEC=.;
 ELSE JOBSEC = O109105M;
IF O51E48=6 OR (O51E48 = 4) OR (O51E48 =3) THEN MARRIED=0;
  ELSE MARRIED=1;
IF RACE4=3 THEN NONWHITE=0;
IF RACE4 NE 3 THEN NONWHITE =1;
IF O102E98=-1 THEN DEBT = .;
```

```
   ELSE DEBT = O102E98;
IF O110E106 = -1 THEN SAT = .;
   ELSE SAT = O110E106;
IF O22E21 = -1 THEN PCS = .;
ELSE PCS = O22E21;

IF INTEND = . THEN MISSING = 1;
 ELSE MISSING = 0;

DATA ELT1ML6.ELT1ML6;
     SET ALL;
     IF (O35E34=1) AND (E9=1 OR E9=2) AND (E8=1);
     IF MISSING = 0;
DATA ELT1ML12.ELT1ML12;
     SET ALL;
     IF (O35E34=1) AND (E9=3 OR E9=4) AND (E8=1);
     IF MISSING = 0;
DATA ELT1MG12.ELT1MG12;
     SET ALL;
     IF (O35E34=1) AND (E9=5) AND (E8=1);
     IF MISSING = 0;
DATA ELT2ML6.ELT2ML6;
     SET ALL;
     IF (O35E34=1) AND (E9=1 OR E9=2) AND (E8=2);
     IF MISSING = 0;
DATA ELT2ML12.ELT2ML12;
     SET ALL;
     IF (O35E34=1) AND (E9=3 OR E9=4) AND (E8=2);
     IF MISSING = 0;
DATA ELT2MG12.ELT2MG12;
     SET ALL;
     IF (O35E34=1) AND (E9=5) AND (E8=2);
     IF MISSING = 0;
DATA ELT3ML6.ELT3ML6;
     SET ALL;
     IF (O35E34=1) AND (E9=1 OR E9=2) AND (E8>2);
     IF MISSING = 0;
DATA ELT3ML12.ELT3ML12;
     SET ALL;
     IF (O35E34=1) AND (E9=3 OR E9=4) AND (E8>2);
     IF MISSING = 0;
DATA ELT3MG12.ELT3MG12;
     SET ALL;
     IF (O35E34=1) AND (E9=5) AND (E8>2);
     IF MISSING = 0;
DATA ELT1FL6.ELT1FL6;
     SET ALL;
     IF (O35E34=2) AND (E9=1 OR E9=2) AND (E8=1);
     IF MISSING = 0;
DATA ELT1FL12.ELT1FL12;
     SET ALL;
     IF (O35E34=2) AND (E9=3 OR E9=4) AND (E8=1);
     IF MISSING = 0;
DATA ELT1FG12.ELT1FG12;
     SET ALL;
     IF (O35E34=2) AND (E9=5) AND (E8=1);
     IF MISSING = 0;
DATA ELT2FL6.ELT2FL6;
     SET ALL;
     IF (O35E34=2) AND (E9=1 OR E9=2) AND (E8=2);
     IF MISSING = 0;
DATA ELT2FL12.ELT2FL12;
     SET ALL;
     IF (O35E34=2) AND (E9=3 OR E9=4) AND (E8=2);
     IF MISSING = 0;
DATA ELT2FG12.ELT2FG12;
     SET ALL;
     IF (O35E34=2) AND (E9=5) AND (E8=2);
     IF MISSING = 0;
DATA ELT3FL6.ELT3FL6;
     SET ALL;
     IF (O35E34=2) AND (E9=1 OR E9=2) AND (E8>2);
```

```
     IF MISSING = 0;
DATA ELT3FL12.ELT3FL12;
     SET ALL;
     IF (035E34=2) AND (E9=3 OR E9=4) AND (E8>2);
     IF MISSING = 0;
DATA ELT3FG12.ELT3FG12;
     SET ALL;
     IF (035E34=2) AND (E9=5) AND (E8>2);
     IF MISSING = 0;
/*
//
```

CODE FOR REGRESSING FIRST TERM MALES

```
//PROJ JOB (9911,9999),'PROJECT',CLASS=C
//   EXEC SAS,REGION=1500K
//WORK DD UNIT=SYSDA,SPACE=(CYL,(16,4))
//ELT1ML6 DD DISP=SHR,DSN=MSS.S9911.ELT1ML6
//ELT1ML12 DD DISP=SHR,DSN=MSS.S9911.ELT1ML12
//ELT1MG12 DD DISP=SHR,DSN=MSS.S9911.ELT1MG12
//SYSIN DD *
DATA ELT1ML6;
SET ELT1ML6.ELT1ML6;
PROC FREQ;
  TABLES ACTUAL INTEND INC ONSHIP  SPECPAY
  CIVJOB JOBSEC MARRIED GRADE SAT
  NONWHITE AGE EDUC DEP PCS DEBT;
  TITLE '1ST TERM MALES, 0 TO 6 MONTHS';
PROC LOGIST CTABLE;
  TITLE'1ST TERM MALES, 0 TO 6 MONTHS, ACTUAL & INTEND';
  MODEL ACTUAL = INTEND INC ONSHIP SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;
PROC LOGIST CTABLE;
  TITLE'1ST TERM MALES, 0 TO 6 MONTHS, ACTUAL';
  MODEL ACTUAL = INC ONSHIP SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;

DATA ELT1ML12;
SET ELT1ML12.ELT1ML12;
PROC FREQ;
  TABLES ACTUAL INTEND INC ONSHIP  SPECPAY
  CIVJOB JOBSEC MARRIED GRADE SAT
  NONWHITE AGE EDUC DEP PCS DEBT;
  TITLE '1ST TERM MALES, 6 TO 12 MONTHS';
PROC LOGIST CTABLE;
  TITLE'1ST TERM MALES, 6 TO 12 MONTHS, ACTUAL & INTEND';
  MODEL ACTUAL = INTEND INC ONSHIP SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;
PROC LOGIST CTABLE;
  TITLE'1ST TERM MALES, 6 TO 12 MONTHS, ACTUAL';
  MODEL ACTUAL = INC ONSHIP SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;


DATA ELT1MG12;
SET ELT1MG12.ELT1MG12;
PROC FREQ;
  TABLES ACTUAL INTEND INC ONSHIP  SPECPAY
  CIVJOB JOBSEC MARRIED GRADE SAT
  NONWHITE AGE EDUC DEP PCS DEBT;
  TITLE '1ST TERM, 12 TO 24 MONTHS';
PROC LOGIST CTABLE;
  TITLE'1ST TERM MALES, 12 TO 24 MONTHS, ACTUAL & INTEND';
  MODEL ACTUAL = INTEND INC ONSHIP SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;
PROC LOGIST CTABLE;
  TITLE'1ST TERM MALES, 12 TO 24 MONTHS, ACTUAL';
  MODEL ACTUAL = INC ONSHIP SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;

/*
//
```

CODE FOR REGRESSING SECOND TERM MALES

```
//PROJ JOB (9911,9999),'PROJECT',CLASS=C
//   EXEC SAS,REGION=1500K
//WORK DD UNIT=SYSDA,SPACE=(CYL,(16,4))
//ELT2ML6 DD DISP=SHR,DSN=MSS.S9911.ELT2ML6
//ELT2ML12 DD DISP=SHR,DSN=MSS.S9911.ELT2ML12
//ELT2MG12 DD DISP=SHR,DSN=MSS.S9911.ELT2MG12
//SYSIN DD *
DATA ELT2ML6;
SET ELT2ML6.ELT2ML6;
PROC FREQ;
  TABLES ACTUAL INTEND INC ONSHIP  SPECPAY
  CIVJOB JOBSEC MARRIED GRADE SAT
  NONWHITE AGE EDUC DEP PCS DEBT;
  TITLE '2ND TERM MALE, 0 TO 6 MONTHS';
PROC LOGIST CTABLE;
  TITLE'2ND TERM MALES, 0 TO 6 MONTHS, ACTUAL & INTEND';
  MODEL ACTUAL = INTEND INC ONSHIP SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;
PROC LOGIST CTABLE;
  TITLE'2ND TERM MALES, 0 TO 6 MONTHS, ACTUAL';
  MODEL ACTUAL = INC ONSHIP SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;


DATA ELT2ML12;
SET ELT2ML12.ELT2ML12;
PROC FREQ;
  TABLES ACTUAL INTEND INC ONSHIP  SPECPAY
  CIVJOB JOBSEC MARRIED GRADE SAT
  NONWHITE AGE EDUC DEP PCS DEBT;
  TITLE '2ND TERM MALE, 6 TO 12 MONTHS';
PROC LOGIST CTABLE;
  TITLE'2ND TERM MALE, 6 TO 12 MONTHS, ACTUAL & INTEND';
  MODEL ACTUAL = INTEND INC ONSHIP SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;
PROC LOGIST CTABLE;
  TITLE'2ND TERM MALE, 6 TO 12 MONTHS, ACTUAL';
  MODEL ACTUAL = INC ONSHIP SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;


DATA ELT2MG12;
SET ELT2MG12.ELT2MG12;
PROC FREQ;
  TABLES ACTUAL INTEND INC ONSHIP  SPECPAY
  CIVJOB JOBSEC MARRIED GRADE SAT
  NONWHITE AGE EDUC DEP PCS DEBT;
  TITLE '2ND TERM MALE, 12 TO 24 MONTHS';
PROC LOGIST CTABLE;
  TITLE'2ND TERM MALE, 12 TO 24 MONTHS, ACTUAL & INTEND';
  MODEL ACTUAL = INTEND INC ONSHIP SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;
PROC LOGIST CTABLE;
  TITLE'2ND TERM MALE, 12 TO 24 MONTHS, ACTUAL';
  MODEL ACTUAL = INC ONSHIP SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;
/*
//
```

CODE FOR REGRESSING THIRD TERM MALES

```
//PROJ JOB (9911,9999),'PROJECT',CLASS=C
//   EXEC SAS,REGION=1500K
//WORK DD UNIT=SYSDA,SPACE=(CYL,(16,4))
//ELT3ML6 DD DISP=SHR,DSN=MSS.S9911.ELT3ML6
//ELT3ML12 DD DISP=SHR,DSN=MSS.S9911.ELT3ML12
//ELT3MG12 DD DISP=SHR,DSN=MSS.S9911.ELT3MG12
//SYSIN DD *
DATA ELT3ML6;
SET ELT3ML6.ELT3ML6;
PROC FREQ;
  TABLES ACTUAL INTEND INC ONSHIP  SPECPAY
  CIVJOB JOBSEC MARRIED GRADE SAT
  NONWHITE AGE EDUC DEP PCS DEBT;
  TITLE '3RD TERM MALE, 0 TO 6 MONTHS';
PROC LOGIST CTABLE;
  TITLE'3RD TERM MALE, 0 TO 6 MONTHS, ACTUAL & INTEND';
  MODEL ACTUAL = INTEND INC ONSHIP SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;
PROC LOGIST CTABLE;
  TITLE'3RD TERM MALE, 0 TO 6 MONTHS, ACTUAL';
  MODEL ACTUAL = INC ONSHIP SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;


DATA ELT3ML12;
SET ELT3ML12.ELT3ML12;
PROC FREQ;
  TABLES ACTUAL INTEND INC ONSHIP  SPECPAY
  CIVJOB JOBSEC MARRIED GRADE SAT
  NONWHITE AGE EDUC DEP PCS DEBT;
  TITLE '3RD TERM MALE, 6 TO 12 MONTHS';
PROC LOGIST CTABLE;
  TITLE'3RD TERM MALE, 6 TO 12 MONTHS, ACTUAL & INTEND';
  MODEL ACTUAL = INTEND INC ONSHIP SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;
PROC LOGIST CTABLE;
  TITLE'3RD TERM MALE, 6 TO 12 MONTHS, ACTUAL';
  MODEL ACTUAL = INC ONSHIP SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;


DATA ELT3MG12;
SET ELT3MG12.ELT3MG12;
PROC FREQ;
  TABLES ACTUAL INTEND INC ONSHIP  SPECPAY
  CIVJOB JOBSEC MARRIED GRADE SAT
  NONWHITE AGE EDUC DEP PCS DEBT;
  TITLE '3RD TERM MALE, 12 TO 24 MONTHS';
PROC LOGIST CTABLE;
  TITLE'3RD TERM MALE, 12 TO 24 MONTHS, ACTUAL & INTEND';
  MODEL ACTUAL = INTEND INC ONSHIP SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;
PROC LOGIST CTABLE;
  TITLE'3RD TERM MALE, 12 TO 24 MONTHS, ACTUAL';
  MODEL ACTUAL = INC ONSHIP SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;
/*
//
```

CODE FOR REGRESSING FIRST TERM FEMALES

```
//PROJ JOB (9911,9999),'PROJECT',CLASS=C
//    EXEC SAS,REGION=1500K
//WORK DD UNIT=SYSDA,SPACE=(CYL,(16,4))
//ELT1FL6 DD DISP=SHR,DSN=MSS.S9911.ELT1FL6
//ELT1FL12 DD DISP=SHR,DSN=MSS.S9911.ELT1FL12
//ELT1FG12 DD DISP=SHR,DSN=MSS.S9911.ELT1FG12
//SYSIN DD *
DATA ELT1FL6;
SET ELT1FL6.ELT1FL6;
PROC FREQ;
  TABLES ACTUAL INTEND INC ONSHIP  SPECPAY
  CIVJOB JOBSEC MARRIED GRADE SAT
  NONWHITE AGE EDUC DEP PCS DEBT;
TITLE '1ST TERM FEMALES, 0 TO 6 MONTHS';
PROC LOGIST CTABLE;
  TITLE'1ST TERM FEMALES, 0 TO 6 MONTHS, ACTUAL & INTEND';
  MODEL ACTUAL = INTEND INC ONSHIP SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;
PROC LOGIST CTABLE;
  TITLE'1ST TERM FEMALES, 0 TO 6 MONTHS, ACTUAL';
  MODEL ACTUAL = INC ONSHIP SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;

DATA ELT1FL12;
SET ELT1FL12.ELT1FL12;
PROC FREQ;
  TABLES ACTUAL INTEND INC ONSHIP  SPECPAY
  CIVJOB JOBSEC MARRIED GRADE SAT
  NONWHITE AGE EDUC DEP PCS DEBT;
  TITLE '1ST TERM FEMALES, 6 TO 12 MONTHS';
PROC LOGIST CTABLE;
  TITLE'1ST TERM FEMALES, 6 TO 12 MONTHS, ACTUAL & INTEND';
  MODEL ACTUAL = INTEND INC ONSHIP SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;
PROC LOGIST CTABLE;
  TITLE'1ST TERM FEMALES, 6 TO 12 MONTHS, ACTUAL';
  MODEL ACTUAL = INC ONSHIP SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;


DATA ELT1FG12;
SET ELT1FG12.ELT1FG12;
PROC FREQ;
  TABLES ACTUAL INTEND INC ONSHIP  SPECPAY
  CIVJOB JOBSEC MARRIED GRADE SAT
  NONWHITE AGE EDUC DEP PCS DEBT;
  TITLE '1ST TERM FEMALES, 12 TO 24 MONTHS';
PROC LOGIST CTABLE;
  TITLE'1ST TERM FEMALES, 12 TO 24 MONTHS, ACTUAL & INTEND';
  MODEL ACTUAL = INTEND INC ONSHIP SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;
PROC LOGIST CTABLE;
  TITLE'1ST TERM FEMALES, 12 TO 24 MONTHS, ACTUAL';
  MODEL ACTUAL = INC ONSHIP SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;
/*
//
```

CODE FOR REGRESSING SECOND TERM FEMALES

```
//PROJ JOB (9911,9999),'PROJECT',CLASS=C
//    EXEC SAS,REGION=1500K
//WORK DD UNIT=SYSDA,SPACE=(CYL,(16,4))
//ELT2FL6 DD DISP=SHR,DSN=MSS.S9911.ELT2FL6
//ELT2FL12 DD DISP=SHR,DSN=MSS.S9911.ELT2FL12
//ELT2FG12 DD DISP=SHR,DSN=MSS.S9911.ELT2FG12
//SYSIN DD *
DATA ELT2FL6;
SET ELT2FL6.ELT2FL6;
PROC FREQ;
  TABLES ACTUAL INTEND INC ONSHIP  SPECPAY
  CIVJOB JOBSEC MARRIED GRADE SAT
  NONWHITE AGE EDUC DEP PCS DEBT;
  TITLE ' 2ND TERM FEMALES, 0 TO 6 MONTHS';
PROC LOGIST CTABLE;
  TITLE'2ND TERM FEMALES, 0 TO 6 MONTHS, ACTUAL & INTEND';
  MODEL ACTUAL = INTEND INC ONSHIP SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;
PROC LOGIST CTABLE;
  TITLE'2ND TERM FEMALES, 0 TO 6 MONTHS, ACTUAL';
  MODEL ACTUAL = INC ONSHIP SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;


DATA ELT2FL12;
SET ELT2FL12.ELT2FL12;
PROC FREQ;
  TABLES ACTUAL INTEND INC ONSHIP  SPECPAY
  CIVJOB JOBSEC MARRIED GRADE SAT
  NONWHITE AGE EDUC DEP PCS DEBT;
  TITLE '2ND TERM FEMALES, 6 TO 12 MONTHS';
PROC LOGIST CTABLE;
  TITLE'2ND TERM FEMALE, 6 TO 12 MONTHS, ACTUAL & INTEND';
  MODEL ACTUAL = INTEND INC ONSHIP SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;
PROC LOGIST CTABLE;
  TITLE'2ND TERM FEMALE, 6 TO 12 MONTHS, ACTUAL';
  MODEL ACTUAL = INC ONSHIP SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;


DATA ELT2FG12;
SET ELT2FG12.ELT2FG12;
PROC FREQ;
  TABLES ACTUAL INTEND INC ONSHIP  SPECPAY
  CIVJOB JOBSEC MARRIED GRADE SAT
  NONWHITE AGE EDUC DEP PCS DEBT;
TITLE '2ND TERM FEMALE, 12 TO 24 MONTHS';
PROC LOGIST CTABLE;
  TITLE'2ND TERM FEMALE, 12 TO 24 MONTHS, ACTUAL & INTEND';
  MODEL ACTUAL = INTEND INC ONSHIP SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;
PROC LOGIST CTABLE;
  TITLE'2ND TERM FEMALE, 12 TO 24 MONTHS, ACTUAL';
  MODEL ACTUAL = INC ONSHIP SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;
/*
//
```

CODE FOR REGRESSING THIRD TERM FEMALES

```
//PROJ JOB (9911,9999),'PROJECT',CLASS=C
//   EXEC SAS,REGION=1500K
//WORK DD UNIT=SYSDA,SPACE=(CYL,(16,4))
//ELT3FL6 DD DISP=SHR,DSN=MSS.S9911.ELT3FL6
//ELT3FL12 DD DISP=SHR,DSN=MSS.S9911.ELT3FL12
//ELT3FG12 DD DISP=SHR,DSN=MSS.S9911.ELT3FG12
//SYSIN DD *
DATA ELT3FL6;
SET ELT3FL6.ELT3FL6;
PROC FREQ;
  TABLES ACTUAL INTEND INC SPECPAY
  CIVJOB JOBSEC MARRIED GRADE SAT
  NONWHITE AGE EDUC DEP PCS DEBT;
  TITLE '3RD TERM FEMALE, 0 TO 6 MONTHS';
PROC LOGIST CTABLE;
  TITLE'3RD TERM FEMALE, 0 TO 6 MONTHS, ACTUAL & INTEND';
  MODEL ACTUAL = INTEND INC SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;
PROC LOGIST CTABLE;
  TITLE'3RD TERM FEMALE, 0 TO 6 MONTHS, ACTUAL';
  MODEL ACTUAL = INC SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;


DATA ELT3FL12;
SET ELT3FL12.ELT3FL12;
PROC FREQ;
  TABLES ACTUAL INTEND INC  SPECPAY
  CIVJOB JOBSEC MARRIED GRADE SAT
  NONWHITE AGE EDUC DEP PCS DEBT;
  TITLE '3RD TERM FEMALE, 6 TO 12 MONTHS';
PROC LOGIST CTABLE;
  TITLE'3RD TERM FEMALE, 6 TO 12 MONTHS, ACTUAL & INTEND';
  MODEL ACTUAL = INTEND INC SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;
PROC LOGIST CTABLE;
  TITLE'3RD TERM FEMALE, 6 TO 12 MONTHS, ACTUAL';
  MODEL ACTUAL = INC SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;


DATA ELT3FG12;
SET ELT3FG12.ELT3FG12;
PROC FREQ;
  TABLES ACTUAL INTEND INC  SPECPAY
  CIVJOB JOBSEC MARRIED GRADE SAT
  NONWHITE AGE EDUC DEP PCS DEBT;
  TITLE '3RD TERM FEMALE, 12 TO 24 MONTHS';
PROC LOGIST CTABLE;
  TITLE'3RD TERM FEMALE, 12 TO 24 MONTHS, ACTUAL & INTEND';
  MODEL ACTUAL = INTEND INC SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;
PROC LOGIST CTABLE;
  TITLE'3RD TERM FEMALE, 12 TO 24 MONTHS, ACTUAL';
  MODEL ACTUAL = INC SPECPAY
  CIVJOB JOBSEC MARRIED NONWHITE GRADE SAT
  AGE EDUC DEP PCS DEBT/PRINTI;
/*
//
```

APPENDIX B

PROGRAMMING CODE FOR MARRIED DATA

CODE FOR CREATING STRATIFIED DATA SETS

```
//WIFE JOB (0713,9999),'COUPLES',CLASS=G
//    EXEC SAS,REGION=1500K
//WORK DD UNIT=SYSDA,SPACE=(CYL,(100,20))
//COUPLES DD DISP=SHR,
//  UNIT=SYSDA,DSNAME=MSS.F3964.COUPLES
//WIFE DD DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
//     SPACE=(CYL,(4,4),RLSE),DSN=MSS.S0713.WIFE
//WTRM1 DD DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
//     SPACE=(CYL,(4,4),RLSE),DSN=MSS.S0713.WTRM1
//WTRM2 DD DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
//     SPACE=(CYL,(4,4),RLSE),DSN=MSS.S0713.WTRM2
//WTRM3 DD DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
//     SPACE=(CYL,(4,4),RLSE),DSN=MSS.S0713.WTRM3
//SYSIN    DD *
DATA ALL;
     SET COUPLES.COUPLE1;
     RENAME O67E64 = DEP;
     RENAME O36E35 = AGE;
IF S8<1 THEN SEP=.;
ELSE SEP = S8;
IF S37<1 THEN SAGE =.;
 ELSE SAGE = S37;
IF O35E34=2 THEN SEX = 0;
IF O35E34=1 THEN SEX = 1;
IF S25=-3 THEN DELETE;
IF S25=-8 OR S25=-5 OR S25=-1 THEN DELETE;
IF S25=-6 OR S25 =1 THEN SINTEND=1;
ELSE SINTEND = S25;
IF O22E21<0 THEN PCS=.;
  ELSE PCS = O22E21;
IF S85=-1 THEN SSAT=.;
 ELSE SSAT = S85;
IF S52A = 1 THEN MILSPOUS = 1;
IF S52A = 2 THEN MILSPOUS = 0;
IF S52A=-1 THEN MILSPOUS =.;
IF RACE4=3 THEN NONWHITE=0;
IF RACE4 NE 3 THEN NONWHITE =1;
IF E42 = -1 THEN EDUC = .;
  ELSE EDUC = E42;
IF O5E5 > 9 THEN GRADE = .;
  ELSE GRADE = O5E5;
IF STATUS=1 THEN ACTUAL=1;
IF (STATUS>1 AND STATUS< 4) THEN ACTUAL=0;
IF STATUS = 4 THEN DELETE;
IF E30=-8 OR (E30=-1) OR (E30=-5) THEN DELETE;
IF E30=-6 OR E30=1 THEN INTEND=1;
ELSE INTEND = E30;
IF O106E102<1 THEN INC =.;
 ELSE INC =O106E102;
IF O4E4=1 THEN ONSHIP=1;
IF O4E4=2 THEN ONSHIP=0;
IF O4E4 = -1 THEN ONSHIP = .;
IF O96E92 < 1 THEN CIVJOB= .;
 ELSE CIVJOB = O96E92;
IF O109105M<1 THEN JOBSEC=.;
 ELSE JOBSEC = O109105M;
IF O102E98=-1 THEN DEBT = .;
   ELSE DEBT = O102E98;
IF O110E106 = -1 THEN SAT = .;
   ELSE SAT = O110E106;
IF O81E77A = 1 THEN SPECPAY = 0;
IF O81E77A = 2 THEN SPECPAY = 1;
IF O81E77A = -1 THEN SPECPAY =.;
IF S62<0 THEN SWORK =.;
ELSE SWORK=S62;
IF MILSPOUS =. OR SEP =. OR SAGE =. OR SSAT =. OR SINTEND = .
OR SWORK =. THEN MISSING= 1;
  ELSE MISSING = 0;
DATA WIFE.WIFE;
     SET ALL;
     IF MISSING = 0;
     IF S18=2;
```

```
DATA WTRM1.WTRM1;
     SET WIFE.WIFE;
     IF S22=1;
DATA WTRM2.WTRM2;
     SET WIFE.WIFE;
     IF S22=2;
DATA WTRM3.WTRM3;
     SET WIFE.WIFE;
     IF S22 >2;
/*
//
```

CODE FOR REGRESSING MARRIED FIRST TERM

```
//WIFE JOB (0713,9999),'COUPLES',CLASS=C
//   EXEC SAS,REGION=1500K
//WORK DD UNIT=SYSDA,SPACE=(CYL,(16,4))
//WIFE DD DISP=SHR,DSN=MSS.S0713.WIFE
//WTRM1 DD DISP=SHR,DSN=MSS.S0713.WTRM1
//SYSIN DD *
DATA WTRM1;
SET WTRM1.WTRM1;
PROC LOGIST CTABLE;
TITLE'MEMBER ON FIRST ENLISTMENT WITHOUT SPOUSE';
MODEL ACTUAL = INTEND INC ONSHIP SPECPAY CIVJOB SEX
NONWHITE EDUC DEP SAT JOBSEC GRADE DEBT AGE PCS /PRINTI;
PROC LOGIST CTABLE;
TITLE'MEMBER ON FIRST ENLISTMENT WITH SPOUSE';
MODEL ACTUAL = INTEND INC ONSHIP SPECPAY CIVJOB SEX
NONWHITE EDUC DEP SAT JOBSEC GRADE DEBT AGE PCS MILSPOUS SEP
SAGE SSAT SWORK/PRINTI;
PROC LOGIST CTABLE;
TITLE'MEMBER ON FIRST ENLISTMENT WITH SINTEND';
MODEL ACTUAL = INTEND INC ONSHIP SPECPAY CIVJOB SEX
NONWHITE EDUC DEP SAT JOBSEC GRADE DEBT AGE PCS MILSPOUS SEP
SAGE SSAT SINTEND SWORK/PRINTI;
PROC FREQ;
TABLES ACTUAL INTEND INC ONSHIP SPECPAY CIVJOB SEX
NONWHITE EDUC DEP SAT JOBSEC GRADE DEBT AGE PCS
MILSPOUS SEP SAGE SSAT SINTEND SWORK;
/*
//
```

CODE FOR REGRESSING MARRIED SECOND TERM

```
//WIFE JOB (0713,9999),'COUPLES',CLASS=C
//   EXEC SAS,REGION=1500K
//WORK DD UNIT=SYSDA,SPACE=(CYL,(16,4))
//WIFE DD DISP=SHR,DSN=MSS.S0713.WIFE
//WTRM2 DD DISP=SHR,DSN=MSS.S0713.WTRM2
//SYSIN DD *
DATA WTRM2;
SET WTRM2.WTRM2;
PROC LOGIST CTABLE;
TITLE'MEMBER ON SECOND ENLISTMENT WITHOUT SPOUSE';
MODEL ACTUAL = INTEND INC ONSHIP SPECPAY CIVJOB SEX
NONWHITE EDUC DEP SAT JOBSEC GRADE DEBT AGE PCS /PRINTI;
PROC LOGIST CTABLE;
TITLE'MEMBER ON SECOND ENLISTMENT WITH SPOUSE';
MODEL ACTUAL = INTEND INC ONSHIP SPECPAY CIVJOB SEX
NONWHITE EDUC DEP SAT JOBSEC GRADE DEBT AGE PCS MILSPOUS SEP
SAGE SSAT SWORK/PRINTI;
PROC LOGIST CTABLE;
TITLE'MEMBER ON SECOND ENLISTMENT WITH SINTEND';
MODEL ACTUAL = INTEND INC ONSHIP SPECPAY CIVJOB SEX
NONWHITE EDUC DEP SAT JOBSEC GRADE DEBT AGE PCS MILSPOUS SEP
SAGE SSAT SINTEND SWORK/PRINTI;
PROC FREQ;
TABLES ACTUAL INTEND INC ONSHIP SPECPAY CIVJOB SEX
NONWHITE EDUC DEP SAT JOBSEC GRADE DEBT AGE PCS
MILSPOUS SEP SAGE SSAT SINTEND SWORK;
/*
//
```

CODE FOR REGRESSING MARRIED THIRD TERM

```
//WIFE JOB (0713,9999),'COUPLES',CLASS=C
//   EXEC SAS,REGION=1500K
//WORK DD UNIT=SYSDA,SPACE=(CYL,(16,4))
//WIFE DD DISP=SHR,DSN=MSS.S0713.WIFE
//WTRM3 DD DISP=SHR,DSN=MSS.S0713.WTRM3
//SYSIN DD *
DATA WTRM3;
SET WTRM3.WTRM3;
PROC LOGIST CTABLE;
TITLE'MEMBER ON THIRD ENLISTMENT WITHOUT SPOUSE';
MODEL ACTUAL = INTEND INC ONSHIP SPECPAY CIVJOB SEX
NONWHITE EDUC DEP SAT JOBSEC GRADE DEBT AGE PCS /PRINTI;
PROC LOGIST CTABLE;
TITLE'MEMBER ON THIRD ENLISTMENT WITH SPOUSE';
MODEL ACTUAL = INTEND INC ONSHIP SPECPAY CIVJOB SEX
NONWHITE EDUC DEP SAT JOBSEC GRADE DEBT AGE PCS MILSPOUS SEP
SAGE SSAT SWORK/PRINTI;
PROC LOGIST CTABLE;
TITLE'MEMBER ON THIRD ENLISTMENT WITH SINTEND';
MODEL ACTUAL = INTEND INC ONSHIP SPECPAY CIVJOB SEX
NONWHITE EDUC DEP SAT JOBSEC GRADE DEBT AGE PCS MILSPOUS SEP
SAGE SSAT SINTEND SWORK/PRINTI;
PROC FREQ;
TABLES ACTUAL INTEND INC ONSHIP SPECPAY CIVJOB SEX
NONWHITE EDUC DEP SAT JOBSEC GRADE DEBT AGE PCS
MILSPOUS SEP SAGE SSAT SINTEND SWORK;
/*
//
```

APPENDIX C

CHI-SQUARE VALUES USED TO COMPARE MODELS ONE AND TWO[1]

TERM	EAOS		MALE	FEMALE
ONE	0-6	L_o	557.78	435.50
		L_{max}	480.70	333.33
		CHI-SQUARE	77.08	102.17
	6-12	L_o	491.67	491.16
		L_{max}	444.63	411.94
		CHI-SQUARE	47.04	49.22
	12-24	L_o	975.79	677.18
		L_{max}	906.44	634.54
		CHI-SQUARE	69.35	42.64
TWO	0-6	L_o	241.43	121.77
		L_{max}	191.89	83.36
		CHI-SQUARE	49.54	38.41
	6-12	L_o	357.98	125.81
		L_{max}	321.27	112.68
		CHI-SQUARE	36.71	13.13
	12-24	L_o	716.26	426.84
		L_{max}	685.24	359.89
		CHI-SQUARE	31.02	66.95
THREE	0-6	L_o	70.27	*
		L_{max}	55.47	
		CHI-SQUARE	14.80	
	6-12	L_o	162.03	*
		L_{max}	155.52	
		CHI-SQUARE	6.51	
	12-24	L_o	214.84	*
		L_{max}	204.80	
		CHI-SQUARE	10.04	

[1]There is one degree of freedom between models one and two. The critical value for a 99 percent confidence level is 6.63. The critical value for a 97 percent confidence level is 5.02.

*Denotes that third term females did not have enough observations to make them reliable so they were not used.

APPENDIX D

TABLES OF COEFFICIENTS

TABLE OF COEFFICIENTS FOR SECOND TERM MALES
FIRST EAOS PERIOD

NUMBER OF OBSERVATIONS: 263
NUMBER WHICH REENLISTED: 169

VARIABLE	BETA	CHANGE IN PROBABILITY	CHI-SQUARE
INTEND	0.349	0.080	37.14***
INC	0.154	0.035	0.83
ONSHIP	-1.008	-0.231	6.26**
SPECPAY	0.616	0.142	1.56
CIVJOB	-0.044	-0.010	0.32
JOBSEC	0.008	0.002	0.00
MARRIED	-0.294	-0.068	0.37
NONWHITE	0.665	0.153	2.18
GRADE	0.424	0.097	3.01
SAT	0.338	0.078	6.51**
AGE	-0.058	-0.013	0.81
EDUC	0.119	0.027	0.48
DEP	0.365	0.084	3.81*
PCS	-0.089	-0.020	0.77
DEBT	0.086	0.020	0.58

MODEL CHI-SQUARE = 151.01 WITH 15 DEGREES OF FREEDOM

***SIGNIFICANT AT THE 99 PERCENT CONFIDENCE LEVEL
**SIGNIFICANT AT THE 95 PERCENT CONFIDENCE LEVEL
*SIGNIFICANT AT THE 90 PERCENT CONFIDENCE LEVEL

TABLE OF COEFFICIENTS FOR SECOND TERM MALES
SECOND EAOS PERIOD

NUMBER OF OBSERVATIONS: 375
NUMBER WHICH REENLISTED: 254

VARIABLE	BETA	CHANGE IN PROBABILITY	CHI-SQUARE
INTEND	0.254	0.056	32.44***
INC	-0.046	0.010	0.14
ONSHIP	-0.644	-0.141	4.30**
SPECPAY	-0.027	-0.006	0.01
CIVJOB	-0.064	-0.014	1.04
JOBSEC	-0.013	-0.003	0.01
MARRIED	-0.254	-0.055	0.47
NONWHITE	0.380	0.083	1.37
GRADE	0.416	0.091	4.42**
SAT	0.160	0.035	2.26
AGE	0.164	0.036	8.44***
EDUC	-0.199	-0.043	2.01
DEP	0.103	0.023	0.49
PCS	-0.096	-0.021	1.71
DEBT	-0.026	-0.006	0.08

MODEL CHI-SQUARE = 134.31 WITH 15 DEGREES OF FREEDOM

***SIGNIFICANT AT THE 99 PERCENT CONFIDENCE LEVEL
**SIGNIFICANT AT THE 95 PERCENT CONFIDENCE LEVEL
*SIGNIFICANT AT THE 90 PERCENT CONFIDENCE LEVEL

TABLE OF COEFFICIENTS FOR SECOND TERM MALES
THIRD EAOS PERIOD

NUMBER OF OBSERVATIONS: 692
NUMBER WHICH REENLISTED: 482

VARIABLE	BETA	CHANGE IN PROBABILITY	CHI-SQUARE
INTEND	0.170	0.036	9.34***
INC	-0.004	-0.001	0.00
ONSHIP	0.310	0.066	2.09
SPECPAY	0.264	0.056	1.32
CIVJOB	-0.042	-0.009	0.98
JOBSEC	-0.014	-0.003	0.01
MARRIED	-0.099	-0.021	0.18
NONWHITE	0.715	0.151	8.55***
GRADE	0.433	0.092	10.52***
SAT	0.234	0.049	9.24***
AGE	0.058	0.012	2.61
EDUC	-0.169	-0.036	3.30*
DEP	0.136	0.029	1.70
PCS	-0.030	-0.006	0.34
DEBT	-0.155	-0.033	6.27**

MODEL CHI-SQUARE = 164.23 WITH 15 DEGREES OF FREEDOM

***SIGNIFICANT AT THE 99 PERCENT CONFIDENCE LEVEL
**SIGNIFICANT AT THE 95 PERCENT CONFIDENCE LEVEL
*SIGNIFICANT AT THE 90 PERCENT CONFIDENCE LEVEL

TABLE OF COEFFICIENTS FOR THIRD TERM MALES
FIRST EAOS PERIOD

NUMBER OF OBSERVATIONS: 220
NUMBER WHICH REENLISTED: 206

VARIABLE	BETA	CHANGE IN PROBABILITY	CHI-SQUARE
INTEND	0.412	0.025	10.98***
INC	-0.016	-0.001	0.00
ONSHIP	0.527	0.031	0.34
SPECPAY	0.790	0.047	0.56
CIVJOB	-0.130	-0.008	0.43
JOBSEC	-0.607	-0.036	2.09
MARRIED	-0.532	-0.032	0.11
NONWHITE	1.783	0.106	2.15
GRADE	1.166	0.069	4.10*
SAT	-0.292	-0.017	0.88
AGE	0.040	0.002	0.09
EDUC	0.362	0.022	0.68
DEP	-0.571	-0.034	2.14
PCS	-0.102	-0.006	0.34
DEBT	-0.083	-0.005	0.09

MODEL CHI-SQUARE = 48.75 WITH 15 DEGREES OF FREEDOM

***SIGNIFICANT AT THE 99 PERCENT CONFIDENCE LEVEL
**SIGNIFICANT AT THE 95 PERCENT CONFIDENCE LEVEL
*SIGNIFICANT AT THE 90 PERCENT CONFIDENCE LEVEL

TABLE OF COEFFICIENTS FOR THIRD TERM MALES
SECOND EAOS PERIOD

NUMBER OF OBSERVATIONS: 355
NUMBER WHICH REENLISTED: 324

VARIABLE	BETA	CHANGE IN PROBABILITY	CHI-SQUARE
INTEND	0.176	0.014	6.41**
INC	-0.041	-0.003	0.04
ONSHIP	-0.454	-0.036	0.96
SPECPAY	0.427	0.034	0.54
CIVJOB	0.019	0.002	0.03
JOBSEC	-0.356	-0.028	1.91
MARRIED	0.454	0.036	0.54
NONWHITE	1.183	0.094	3.30*
GRADE	0.251	0.020	0.86
SAT	0.151	0.012	0.61
AGE	0.142	0.011	5.04**
EDUC	-0.217	-0.017	2.03
DEP	-0.061	-0.005	0.11
PCS	-0.005	-0.000	0.00
DEBT	0.059	0.005	0.18

MODEL CHI-SQUARE = 54.85 WITH 15 DEGREES OF FREEDOM

***SIGNIFICANT AT THE 99 PERCENT CONFIDENCE LEVEL
**SIGNIFICANT AT THE 95 PERCENT CONFIDENCE LEVEL
*SIGNIFICANT AT THE 90 PERCENT CONFIDENCE LEVEL

TABLE OF COEFFICIENTS FOR THIRD TERM MALES
THIRD EAOS PERIOD

NUMBER OF OBSERVATIONS: 676
NUMBER WHICH REENLISTED: 632

VARIABLE	BETA	CHANGE IN PROBABILITY	CHI-SQUARE
INTEND	0.168	0.010	9.79***
INC	0.546	0.033	8.22***
ONSHIP	-0.040	-0.002	0.01
SPECPAY	0.342	0.021	0.53
CIVJOB	-0.026	-0.002	0.11
JOBSEC	-0.349	-0.021	3.44*
MARRIED	-0.207	-0.013	0.13
NONWHITE	0.353	0.021	0.56
GRADE	1.408	0.086	29.87***
SAT	0.324	0.020	4.44**
AGE	-0.035	-0.002	0.49
EDUC	0.191	0.012	1.24
DEP	-0.223	-0.014	1.92
PCS	-0.139	-0.008	2.83*
DEBT	-0.163	-0.010	1.63

MODEL CHI-SQUARE = 120.69 WITH 15 DEGREES OF FREEDOM

***SIGNIFICANT AT THE 99 PERCENT CONFIDENCE LEVEL
**SIGNIFICANT AT THE 95 PERCENT CONFIDENCE LEVEL
*SIGNIFICANT AT THE 90 PERCENT CONFIDENCE LEVEL

TABLE OF COEFFICIENTS FOR FIRST TERM FEMALES
FIRST EAOS PERIOD

NUMBER OF OBSERVATIONS: 398
NUMBER WHICH REENLISTED: 153

VARIABLE	BETA	CHANGE IN PROBABILITY	CHI-SQUARE
INTEND	0.336	0.080	78.67***
INC	0.094	0.022	0.50
ONSHIP	0.705	0.167	2.08
SPECPAY	-0.082	-0.019	0.07
CIVJOB	-0.119	-0.028	5.02**
JOBSEC	0.083	0.020	0.24
MARRIED	0.059	0.014	0.03
NONWHITE	0.539	0.128	2.73*
GRADE	0.214	0.051	1.16
SAT	0.206	0.049	4.00**
AGE	-0.017	-0.004	0.09
EDUC	0.122	0.029	1.00
DEP	-0.054	-0.013	0.07
PCS	0.155	0.037	2.40
DEBT	-0.009	-0.002	0.01

MODEL CHI-SQUARE = 196.96 WITH 15 DEGREES OF FREEDOM

***SIGNIFICANT AT THE 99 PERCENT CONFIDENCE LEVEL
**SIGNIFICANT AT THE 95 PERCENT CONFIDENCE LEVEL
*SIGNIFICANT AT THE 90 PERCENT CONFIDENCE LEVEL

TABLE OF COEFFICIENTS FOR FIRST TERM FEMALES
SECOND EAOS PERIOD

NUMBER OF OBSERVATIONS: 418
NUMBER WHICH REENLISTED: 221

VARIABLE	BETA	CHANGE IN PROBABILITY	CHI-SQUARE
INTEND	0.290	0.072	64.17***
INC	0.057	0.014	0.25
ONSHIP	0.134	0.033	0.08
SPECPAY	0.223	0.056	0.71
CIVJOB	-0.053	-0.013	1.18
JOBSEC	-0.035	-0.009	0.05
MARRIED	0.283	0.070	1.01
NONWHITE	0.961	0.240	10.14***
GRADE	0.646	0.161	10.79***
SAT	0.121	0.030	1.73
AGE	-0.027	-0.007	0.40
EDUC	-0.048	-0.012	0.16
DEP	0.240	0.060	1.90
PCS	-0.162	-0.040	3.27*
DEBT	-0.011	-0.003	0.02

MODEL CHI-SQUARE = 166.15 WITH 15 DEGREES OF FREEDOM

***SIGNIFICANT AT THE 99 PERCENT CONFIDENCE LEVEL
**SIGNIFICANT AT THE 95 PERCENT CONFIDENCE LEVEL
*SIGNIFICANT AT THE 90 PERCENT CONFIDENCE LEVEL

TABLE OF COEFFICIENTS FOR FIRST TERM FEMALES
THIRD EAOS PERIOD

NUMBER OF OBSERVATIONS: 556
NUMBER WHICH REENLISTED: 285

VARIABLE	BETA	CHANGE IN PROBABILITY	CHI-SQUARE
INTEND	0.186	0.046	39.59***
INC	0.219	0.055	5.56**
ONSHIP	0.129	0.032	0.15
SPECPAY	0.073	0.018	0.12
CIVJOB	-0.053	-0.013	1.98
JOBSEC	-0.019	-0.005	0.02
MARRIED	0.118	0.030	0.31
NONWHITE	0.592	0.148	5.69**
GRADE	0.479	0.120	10.42***
SAT	0.196	0.049	6.42**
AGE	-0.031	-0.008	0.90
EDUC	-0.095	-0.024	0.91
DEP	0.065	0.016	0.17
PCS	0.033	0.008	0.21
DEBT	0.000	0.000	0.00

MODEL CHI-SQUARE = 135.89 WITH 15 DEGREES OF FREEDOM

***SIGNIFICANT AT THE 99 PERCENT CONFIDENCE LEVEL
**SIGNIFICANT AT THE 95 PERCENT CONFIDENCE LEVEL
*SIGNIFICANT AT THE 90 PERCENT CONFIDENCE LEVEL

TABLE OF COEFFICIENTS FOR SECOND TERM FEMALES
FIRST EAOS PERIOD

NUMBER OF OBSERVATIONS: 114
NUMBER WHICH REENLISTED: 68

VARIABLE	BETA	CHANGE IN PROBABILITY	CHI-SQUARE
INTEND	0.456	0.110	22.35***
INC	-0.148	-0.036	0.33
ONSHIP	-0.086	-0.021	0.00
SPECPAY	0.190	0.046	0.08
CIVJOB	0.071	0.017	0.46
JOBSEC	0.568	0.137	2.15
MARRIED	-0.703	-0.169	1.20
NONWHITE	2.989	0.719	7.05***
GRADE	0.665	0.160	2.04
SAT	-0.172	-0.041	0.58
AGE	-0.137	-0.033	3.03*
EDUC	0.515	0.124	3.03*
DEP	0.051	0.012	0.02
PCS	-0.020	-0.005	0.01
DEBT	0.385	0.093	3.26*

MODEL CHI-SQUARE = 70.41 WITH 15 DEGREES OF FREEDOM

***SIGNIFICANT AT THE 99 PERCENT CONFIDENCE LEVEL
**SIGNIFICANT AT THE 95 PERCENT CONFIDENCE LEVEL
*SIGNIFICANT AT THE 90 PERCENT CONFIDENCE LEVEL

TABLE OF COEFFICIENTS FOR SECOND TERM FEMALES
SECOND EAOS PERIOD

NUMBER OF OBSERVATIONS: 182
NUMBER WHICH REENLISTED: 130

VARIABLE	BETA	CHANGE IN PROBABILITY	CHI-SQUARE
INTEND	0.250	0.051	11.69***
INC	0.641	0.131	5.02**
ONSHIP	-3.411	-0.696	11.19***
SPECPAY	-0.844	-0.172	1.96
CIVJOB	-0.220	-0.045	4.34*
JOBSEC	0.209	0.043	0.36
MARRIED	0.654	0.134	1.22
NONWHITE	2.973	0.607	13.54***
GRADE	1.261	0.257	9.28***
SAT	0.799	0.163	14.24***
AGE	0.003	0.001	0.00
EDUC	-0.582	-0.119	9.28***
DEP	-0.911	-0.186	7.02***
PCS	-0.170	-0.035	1.34
DEBT	-0.088	-0.018	0.23

MODEL CHI-SQUARE = 105.09 WITH 15 DEGREES OF FREEDOM

***SIGNIFICANT AT THE 99 PERCENT CONFIDENCE LEVEL
**SIGNIFICANT AT THE 95 PERCENT CONFIDENCE LEVEL
*SIGNIFICANT AT THE 90 PERCENT CONFIDENCE LEVEL

TABLE OF COEFFICIENTS FOR SECOND TERM FEMALES
THIRD EAOS PERIOD

NUMBER OF OBSERVATIONS: 440
NUMBER WHICH REENLISTED: 324

VARIABLE	BETA	CHANGE IN PROBABILITY	CHI-SQUARE
INTEND	0.300	0.058	56.13***
INC	-0.061	-0.012	0.26
ONSHIP	-0.481	-0.093	0.72
SPECPAY	-0.327	-0.064	1.09
CIVJOB	-0.112	-0.022	4.16**
JOBSEC	-0.391	-0.076	5.04**
MARRIED	0.227	0.044	0.57
NONWHITE	1.213	0.235	11.33***
GRADE	0.444	0.086	4.77**
SAT	0.002	0.000	0.00
AGE	0.039	0.008	0.72
EDUC	-0.039	-0.008	0.11
DEP	-0.005	-0.001	0.00
PCS	0.170	0.033	3.50*
DEBT	0.084	0.016	0.85

MODEL CHI-SQUARE = 147.72 WITH 15 DEGREES OF FREEDOM

***SIGNIFICANT AT THE 99 PERCENT CONFIDENCE LEVEL
**SIGNIFICANT AT THE 95 PERCENT CONFIDENCE LEVEL
*SIGNIFICANT AT THE 90 PERCENT CONFIDENCE LEVEL

APPENDIX E

CHI-SQUARE VALUES USED TO COMPARE MODELS THREE AND FOUR[2]

TERM ONE	L_o	342.50
	L_{max}	326.34
	CHI-SQUARE	16.16
TERM TWO	L_o	544.08
	L_{max}	532.72
	CHI-SQUARE	11.36
TERM THREE	L_o	242.49
	L_{max}	227.29
	CHI-SQUARE	15.20

[2]There are six degrees of freedom between models three and four. Critical values are listed below for the appropriate degrees of freedom.

Level of Confidence	Critical Value
90%	10.64
95%	12.59
99%	16.81

LIST OF REFERENCES

Adams, Roger C., An Analysis of the U.S. Navy Enlisted Separation Questionnaire, Master's Thesis, Naval Postgraduate School, Monterey, California, June 1981.

Center for Naval Analysis CNR 126, Final Report of the Enlisted Manpower, Personnel and Training Study, by Aline O. Quester and Timothy W. Cooke, September 1986.

Center for Naval Analyses CNS 1168 Vol I, Enlisted Supply: Past, Present and Future, by Lawrence Goldberg, September 1982.

Center for Naval Analyses CRC 476, Determinants of Navy Reenlistment and Extension Rates, by Matthew S. Goldberg and John T. Warner, December 1982.

Center for Naval Analyses CRC 511, Projecting the Retention of Navy Careerists, by Aline O. Quester and James S. Thomason, December 1983.

Center for Naval Analyses CRM 82-1357, Replacement Costs for Navy First-Term Personnel by Rating, by Ellen Balis and Deborah Clay-Mendez, September 1982.

Center for Naval Analyses CRM 85-51, New Estimates of the Effect of Unemployment on Enlisted Retention, by Matthew S. Goldberg, July 1985.

Center for Naval Analyses CRM 87-43, The Effects of Selective Reenlistment Bonuses on Retention, by Donald J. Cymrot, March 1987.

Center for Naval Analyses CRM 88-45, Defining the Population Making Reenlistment Decisions, by Donald J. Cymrot, June 1988.

Center for Naval Analyses Professional Paper 322, Issues in Navy Manpower Research and Policy: An Economist's Perspective, by John T. Warner, December 1981.

Center for Naval Analyses Professional Paper 334, Navy Quality of Life and Reenlistment, by Jean W. Fletcher, November 1981.

Center for Naval Analyses, Determinants of Labor Productivity in the Military, by Alan J. Marcus and Aline O. Quester, November 1984.

Defense Manpower Data Center, 1985 DOD Survey of Military Spouses, June 1986.

Defense Manpower Data Center, 1985 DOD Survey of Officer and Enlisted Personnel User's Manual and Codebook, June 1986.

Eitelberg, Mark J., "American Demographic Trends and National Security: Issues for the 21st Century," paper presented at the Global Demographic Trends and National Security Project of the Bipartisan Commission on Integrated Long-term Strategy, July 1987.

Information Spectrum Inc., Local Economic Factors Affecting Navy First-Term Reenlistments, by M.T. Cowin and F.E. O'Connor, October 1980.

Kmenta, Jan, Elements of Econometrics, 2nd ed., Macmillan Publishing Company, 1986.

Naval Personnel Research and Development Center NRPDC-TR-81-2, Job Satisfaction Measures as Predictors of Retention For Navy Enlisted Personnel, Marjorie H. Royle and David W. Robertson, December 1980.

Naval Personnel Research and Development Center Special Report 83-1, Characteristics and Needs of Navy Families: Policy Implications, by Author J. Farkas and Kathleen P. Durning, October 1982.

Pindyck, Robert S., and Rubinfeld, Daniel L., Econometric Models and Economic Forecasts, 2nd ed., McGraw-Hill Book Company, 1981.

Rearden, Anne-marie, A Multivariate Analysis of Reenlistment Intentions as a Predictor of Reenlistment Behavior, Master's Thesis, Naval Postgraduate School, Monterey, California, December 1988.

Siggerud, Dan-Norman, Retention Intention Among U.S. Navy's Enlisted Personnel: An Analysis of Social, Environmental, and Economical Factors, Master's Thesis, Naval Postgraduate School, Monterey, California, March 1981.

Standard Mathematical Tables, 21st ed., CRC Press, 1973.

Studenmund, A.H., and Cassidy, Henry J., Using Econometrics: A Practical Guide, Little, Brown and Company, 1987.

The Rand Corporation P-7007, Active and Reserve Force Attrition and Retention: a Selected Review of Research and Methods, by Zahava D. Doering and David W. Grissmer, March 1985.

The Rand Corporation 2884-MRAL, Analysis of Second-Term Reenlistment Behavior, by John R. Hiller, September 1982.

Warner, John T. and Goldberg, Matthew S., "The Influence of Non-Pecuniary Factors on Labor Supply: The Case of Navy Enlisted Personnel," Review of Economics and Statistics, Vol 66, 1984.

Westinghouse Public Applied Systems Final Technical Report NR 170-941, Follow-On Study of Family Factors Critical to the Retention of Naval Personnel, by Barbara L. Seboda and Ronald Szoc, February 1984.

Westinghouse Public Applied Systems Technical Report NR 170-941, Family Factors Critical to the Retention of Naval Personnel: The Link Between Retention Intention and Retention Behavior, by Barbara L. Seboda and Ronald Szoc, March 1984.

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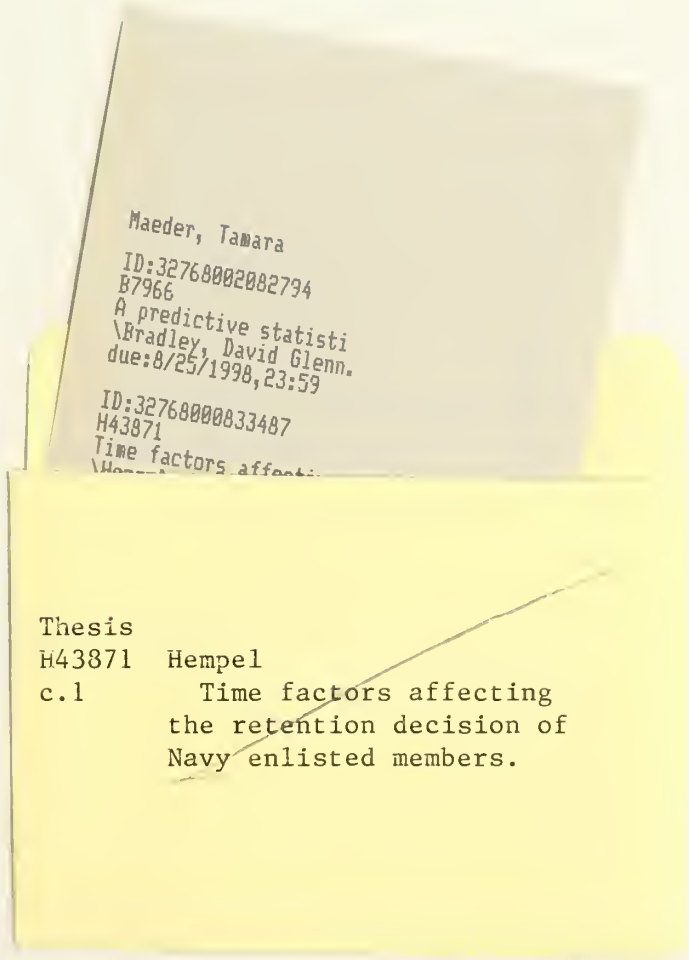
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